

## Odonata of Guangdong, Hong Kong and Macau, South China, part 1: Zygoptera

Keith D.P. Wilson<sup>1</sup> & Xu<sup>2</sup> Zaifu

<sup>1</sup> 18 Chatsworth Road, Brighton, BN1 5DB, UK.  
<kdpwilson@gmail.com>

<sup>2</sup> Department of Entomology, College of Natural Resources and Environment,  
South China Agricultural University, Guangzhou 510642,

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### ABSTRACT

Extensive surveys for odonates were completed in protected areas throughout Guangdong Province, south China during the period 1997-2005. Previously unreported data from these surveys is presented here and, together with published data, is used to catalogue the zygopteran fauna of Guangdong. Checklists are provided for the Zygoptera of Guangdong, Macau and Hong Kong. *Sinosticta debra* sp. nov. is described from Chebaling, northeast Guangdong (holotype ♂ 20 iv 2002, deposited at South China Agriculture University, Department of Entomology, Guangzhou). The presence of *Atrocalopteryx atrocyana* is confirmed from Chinese territory. Keys are provided for the identification of males of all known species of *Rhipidolestes* and Chinese *Megalestes*.

### INTRODUCTION

This paper provides taxonomic and faunistic information on the zygopteran fauna of Guangdong, Hong Kong and Macau. The odonates of Hong Kong (Wilson 1995, 1997a, 2003, 2004a) and Macau (Easton & Liang 2000) have previously been enumerated but hitherto, information concerning the odonate fauna of Guangdong has been limited to type descriptions, occasional locality reports and reports on small collections, and grey literature. The published information available on the odonates of the region is supplemented here with extensive data collected from numerous surveys conducted between 1997 and 2005 throughout Guangdong.

The Tropic of Cancer runs transversely through the centre of Guangdong, which is situated between latitudes 20°01'-25°03'N and longitudes 109°04'-117°02'E. It has a total land area of ca 177,600 km<sup>2</sup>, which is about three quarters, the size of the United Kingdom (241,590 km<sup>2</sup>). It is bordered by Guangxi Zhuang Autonomous Region to the west, Hunan and Jiangxi provinces to the north and Fujian province to the east (Fig. 1). It has the longest coastline of any Chinese mainland province with a length ca 3,368 km and there are numerous offshore islands. The main Xijiang tributary, which is ca 2,122 km long, has its origins in the west in North Vietnam,

Guizhou and Yunnan, and is the third longest river in China. It converges with the North River (Beijiang) west of Guangzhou. To the south of Guangzhou a complex river delta (Pearl River delta) has formed with major feeds from the Xijiang to the west, and the Pearl River (Zhujiang) flowing from Guangzhou, which is in turn fed by the East River (Dongjiang), which has its confluence with the Pear River east of Guangzhou. Macau lies at the western mouth of the Pearl River Delta and Hong Kong is positioned at the eastern mouth. Macau has a land area of just 27.3 km<sup>2</sup> and Hong Kong covers ca 1,100 km<sup>2</sup>. Both Macau and Hong Kong together cover less than 1% of Guangdong's area.

The rich alluvial flood plains associated with the Pearl River delta in south and central Guangdong is considered the most productive agricultural centre in the country. A large proportion of these wetlands are utilised for aquaculture purposes. The production of carps and mullet in polyculture pond systems is the main activity. Surrounding the delta and main river valleys are many hilly areas. The original vegetation of these hills would have been evergreen, broadleaved forest dominated by laurels (Lauraceae) and oaks (Fagaceae – beeches, chestnuts and oaks) but most of the woodland has now been replaced by pine (*Pinus massoniana*) and scrub. Overall, hills above 500 m in height constitute ca 31% of the area of Guangdong. At the northern boundary, the highest mountain, Shikengkong (1,902 m), is located in the southern part of the Nanling Mountain range. The coast, east of the delta is also quite mountainous and has several sizable mountains exceeding 1,000 m. In Hong Kong the highest mountain is Tai Mo Shan at 957 m. The maximum height found in Macau is 174 m.

Guangdong has two main monsoonal seasons comprised of a long, hot wet season (summer) and a short, cool dry season (winter). The average annual rainfall ranges from 1,500 mm to 2,300 mm with nearly 75-80% of the total rainfall falling between May and September. Mean annual temperatures are about 22°C throughout the province with temperatures reduced to an annual mean of 19°C in the mountainous north.

## KADOORIE FARM AND BOTANIC GARDEN CORPORATION SURVEYS

Odonates were collected by a team assembled by the Hong Kong based Kadoorie Farm and Botanic Garden Corporation (KFBG) during field trips conducted between 1997 and 2002. The first author Keith D.P. Wilson (KW), and Graham T. Reels (GR) collected the majority of odonates, with assistance from Michael Lau (ML) and Billy Hau (BH). The sites surveyed are shown in Figure 2 and listed in Table 1. The programme was conducted in collaboration with the Guangdong Forestry Department and the South China Agricultural University. KFBG has published reports on the surveys conducted by the South China surveys teams undertaken in Guangdong (Fellows et al. 2002a-d, 2003a-e; Chan et al. 2004a, b). The KFBG reports list the presence of species at sites but did not provide specific details of specimens collected. Selected synonymic notes are provided here for zygoteran species newly recorded from Guangdong, which have not previously been reported, or were listed in the KFBG reports. Details of selected KFBG survey specimens, for which synonymic notes are not provided, are tabulated in Table 2.

Table 1. Locations surveyed in Guangdong. Status: protected area status — Ci: City-Level Nature Reserve; Co: County Level Nature Reserve; F: National Forest Park; M & B: Man & Biosphere Reserve; N: National Nature Reserve; P: Provincial Nature Reserve; No: no protected area status.

Site	Coordinates	Area [km <sup>2</sup> ]	Altitude [m]	Status	Date
Baiyong, Yangchung County, SW Guangdong	22°24'N, 111°38'E	37	200-1,042	P	03-06 v 1998; 01-04 v 2002
Chebaling National Nature Reserve, Shixing County, NE Guangdong	24°14'-24°46'N, 114°09'-114°16'E	76	330-1,256	N	10-12 v 1996; 07-11 iv 1999 15-17 viii 2000; 20-23 vii 2001 19-21 iv 2002; 25-26 v 2002 27-28 vii 2002
Chengjia Nature Reserve, Yangshan County, NW Guangdong	24° 47' N, 112° 49' E	79	700	P	04-05 vii 2000; 25 vii 2002
Dachouding Nature Reserve, Huaji County, NW Guangdong	24°10' N, 112°23'-112°27'E	27.3	625-1,626	Ci	15-19 iv 2001
Dawuling, Xinyi County, SW Guangdong	22°14'-22°17'N, 111°08'-111°17'E	34.4	800-1,704	P	01-05 xi 2001; 02 v 2002; 30 vi 2002; 03 vii 2002
Dinghushan, Zhaoqing City, C Guangdong	23°10'-23°11'N, 112°31'-112°34'E	11.6	140-1,000	M & B	15-20 iv 1992; 05-08 vi 1992 12-16 vi 1993; 10-16 vi 1994 01-04 vi 1995; 06 v 1998 06 iv 2000; 12 v 2002 11-12 viii 2005
Fengxi Nature Reserve, Dapu County, E Guangdong	24°40'N, 116°45'E	10.9	200-800	P	28-29 vii 2003
Gaozhou Reservoir, Gaozhou City, SW Guangdong	22°09'N, 111°00'E	1002	90	No	04-05 v 2002
Guanyinshan Nature Reserve, Fogang County, C Guangdong	23°57'N, 113°32'E	28	350-1,219	P	10-12 viii 2000
Heishiding Nature Reserve, Fengkai County, W Guangdong	23°27'-23°30'N, 111°53'-112°00'E	42	150-927	P	04-08 vii 2002
Heweishan Forest Farm, Yangchun City, SW Guangdong	21°53'N, 111°07'E	160	To 1,337	Co	04-05 v 1998
Liuxihe, Conghua City, C Guangdong	23° 45' N, 113° 51' E	93	To 1,147	F	13-14 iv 2002; 24-28 vi 2002
Longdoushe, Shixing County, N Guangdong	24°41'N, 113°51'E		300-600		28 vii 2002
Luofushan, Boluo County, C Guangdong	23°20'N, 114°00'E	98	100-1,281	P	08 viii 2004
Luokeng Nature Reserve, SW Guangdong	24°31'N, 113°20'E	294	To 1,587	P	18 ix 2002
Nanling National Nature Reserve, N Guangdong (includes Babaoshan, Chengjia, Dadingshan, Henglongbei, Jiuchongshan, Longtanjiao, Maoping, Pengshan, Shikengkong, Shiziping and Xiaohuangshan areas plus Mangshan in adjacent Hunan province)	24°38'-25°08'N, 112°40'-113°15'E	584	300-1,902	N	25 vi - 07 vii 2000; 23-25 vii 2003 04-06 viii 2004; 09-10 viii 2005
Nankunshan, Longmen County, C Guangdong	23°35'N, 113°45'E	17.5	200-1,100	N	08 vi 2002; 07 viii 2004

Site	Coordinates	Area [km <sup>2</sup> ]	Altitude [m]	Status	Date
Qimuzhang Nature Reserve, Heyuan City, C Guangdong	23°42'N, 115°20'E	58.5	800-1,318	P	31 vii 2003
Qixingkeng, SW Guangdong	22°15'N, 112°02'E	6.9	100-856	Ci	29 iv - 01 v 1998; 24 xi - 01 xii 1998
Sanyue Nature Reserve, Huaiji County, NW Guangdong	24°07'-24°14'N, 111°51'-111°59'E	67.6	240-1,290	Ci	21-24 iv 2001
Shimentai, Yingde City County, N Guangdong	24°22'-24°31'N, 113°05'-113°31'E	823	320-1,587	P	12-14 viii 2000; 28-29 x 2001 28-30 iii 2003; 06-08 viii 2003 03-07 xi 2005; 03-04 xii 2005
Tianluhu Park, Taihe Town, C Guangdong (Guangzhou)	23°18', 113°21'E			F	23-24 vi 2003
Wutongshan National Forest Park, Shenzhen	22°15'N, 113°55'E	31	To 944	F	16-17 v 2001
Xiangtoushan, Huizhou City, SE Guangdong	23°23'N, 114°20'E	107		N	19 v 2002; 11 v 2004
Xiaokeng Forest Park, N Guangdong	24°42'H, 113°49'E		230-600	F	26 v 2002
Yunjishan, Xinfeng County, N Guangdong	24°04'N, 114°11'E	27	To 1,422	P	18-20 vii 2003

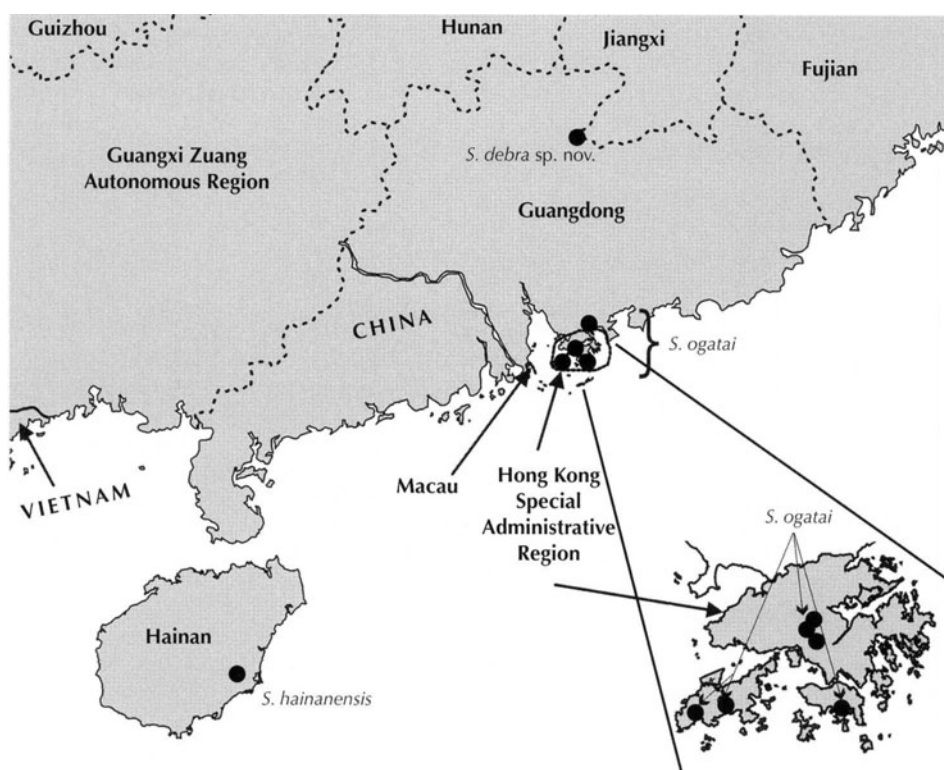


Figure 1: Map of South China illustrating Guangdong, Hong Kong and Macau — with type locations and distribution of the three known species of *Sinosticta*.

## SOUTH CHINA AGRICULTURAL UNIVERSITY SURVEYS

Odonates were collected by teams of undergraduate and postgraduate students led by Xu Zaifu (XZ), entomologist at the South China Agricultural University, during the period 2001-2005. KW accompanied XZ during some of the surveys completed and identified all the specimens collected at the South China Agricultural University campus in Guangzhou. A small number of valuable specimens were also kindly provided by Tong Xiaoli (TX) who is a specialist in mayflies at South China Agricultural University. The sites surveyed are shown in Figure 2 and listed in Table 1. Details of selected South China Agricultural University survey specimens, for which synonymic notes are not provided, are tabulated in Table 2.

## BIODIVERSITY

The fauna and flora of Guangdong is very species rich, especially along the tropical southern coastal strip. It is second only to Yunnan for the highest number of plants recorded from any Chinese province (MacKinnon et al. 1996). A total of 86 species of Zygoptera have been recorded from Guangdong, Hong Kong and Macau, with 79, 38 and 7 species recorded from these locations respectively. A checklist of zygopteran odonates recorded from Guangdong, Hong Kong and Macau, is provided in Table 3. The records collated by Sui and Sun (1984), Zhang (1999) and Hua (2000) were critically reviewed and several implausible or doubtful records were discarded. These discarded records are discussed and listed below under 'Doubtful records'. The odonate faunas of neighbouring Hainan (Wilson & Reels 2001) and Guangxi

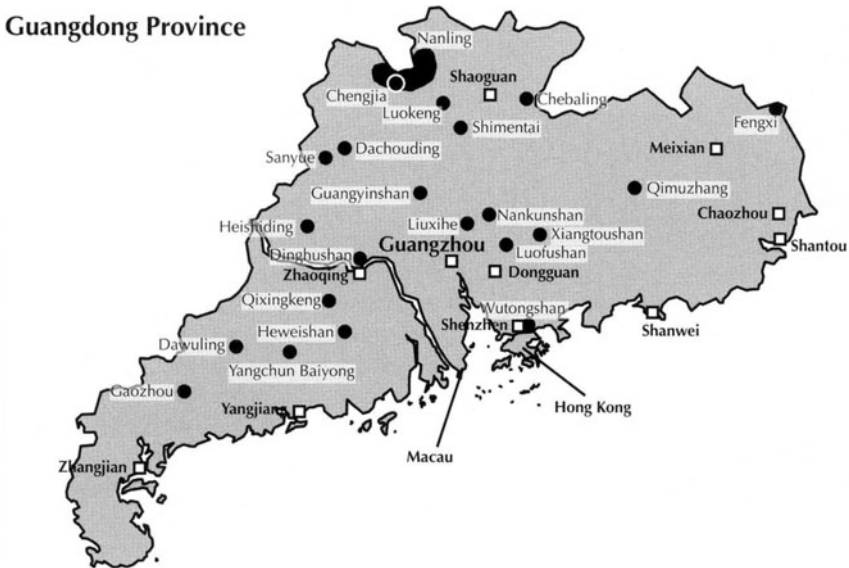


Figure 2: Map of Guangdong — showing the location (●) of the main sites surveyed.

(Wilson & Reels 2003; Wilson 2005) have been comprehensively reported recently. The total of 86 species of zygoptera catalogued from Guangdong, Hong Kong and Macau area is higher than Guangxi which has the second highest Chinese regional total with 74 zygopterans (Wilson & Reels 2003) and a total of 202 odonates (Wilson 2005). Fujian has the third highest recorded number of Zygoptera with 66 out of a total number of 199 odonates (Zhang 1999). It is anticipated that Anisoptera of Guangdong, Hong Kong and Macau will be enumerated shortly.

Table 2. Details of additional zygopteran specimens, not treated in the main text, and not previously reported from Guangdong.

### Species / specimens collected from Guangdong unless otherwise stated

#### *Philoganga robusta*

1 ♂, 1 ♀, Dadingshan (Nanling), 30 vi 2000, coll. KW; 1 ♂, 1 ♀, Maoping (Nanling), 06 vii 2000, coll. KW; 1 ♂, Chebaling, 25-26 v 2002, coll. XZ; 1 ♀, Liuxihe, 24-28 vi 2002, coll. XZ; 3 ♀ (022542, 022598 & 022637), Nankunshan, 08 vi 2002, coll. XZ.

#### *Philoganga vetusta*

1 ♀, Henglongbei (Nanling), 28 vi 2000, coll. KW; 1 ♂, 1 ♀, Longtanjiao (Nanling), 03 vii 2000, coll. KW; 1 ♂, Sanyue, 21 iv 2001, leg. GR; 1 ♂, Wutongshan, 16-17 v 2001, leg. GR; 1 ♂, 1 ♀, Baiyong, 04 v 2002, coll. XZ; 1 ♀, Chebaling, 25-26 v 2002, coll. XZ; 2 ♂, Liuxihe, 24-28 vi 2002, coll. XZ; 1 ♂ (024110), Yunjishan, 18-20 vii 2003, coll. XZ; 1 ♂, Fengxi, 28-29 vii 2003, coll. XZ; 1 ♂, Nankunshan, 07 viii 2004, coll. KW.

#### *Archineura incarnata*

2 ♂, Chebaling, 11 v 1996, coll. KW; 1 ♂, Henglongbei (Nanling), 28 vi 2000, coll. KW; 1 ♂, 1 ♀, Jiuchongshan (Nanling), 29 vi 2000, coll. KW; 1 ♂, Dadingshan (Nanling), 30 vi 2000, coll. KW; 1 ♂, Longtanjiao (Nanling), 02 vii 2000, coll. KW; 1 ♂, Longtanjiao (Nanling), 03 vii 2000, coll. KW; 1 ♂, Chengjia, 05 vii 2000, coll. KW; 1 ♂, Maoping (Nanling), 06 vii 2000, coll. KW; 1 ♂, Shiziping (Nanling), 07 vii 2000, coll. KW; 1 ♂, Guanyinshan, 11 viii 2000, leg. ML; 1 ♂, Chebaling, 16-17 viii 2000, leg. ML; 15 ♂, 14 ♀, Chebaling, 25-26 v 2002, coll. XZ; 3 ♂, 2 ♀, Longdoushe, 28 vii 2002, coll. XZ; 1 ♂, Liuxihe, 24-28 vi 2002, coll. XZ; 1 ♂, Chengjia, 25 vii 2002, coll. XZ; 1 ♂, Dazhuyuan, Luokeng, 18 ix 2002, leg. ML; 1 ♂, Chebaling, 27-28 vii 2002, coll. XZ; 1 ♂, Nankunshan, 07 viii 2004, coll. KW.

#### *Atrocalopteryx atrata*

1 ♀, Chengjia, 25 vii 2002, coll. XZ.

#### *Calopteryx melli*

1 ♂, Chengjia, 05 vii 2000, coll. KW; 1 ♂, 1 ♀, Maoping (Nanling), 06 vii 2000, coll. KW; 1 ♂, Shiziping (Nanling), 07 vii 2000, coll. KW; 1 ♂, Guanyinshan, 11 viii 2000, leg. ML; 1 ♂, Chebaling, 16-17 viii 2000, leg. ML; 2 ♂, Chebaling, 25-26 v 2002, coll. XZ; 1 ♂, Chebaling, 27-28 vii 2002, coll. XZ; 1 ♂, Quncaitang, Luokeng, 18 ix 2002, leg. ML; 1 ♂, Fengxi, 28-29 vii 2003, coll. XZ.

#### *Matrona basilaris basilaris*

1 ♂, Guanyinshan, 11 viii 2000, leg. ML; 2 ♂, Chebaling, 16-17 viii 2000, leg. ML; 20 ♂, 2 ♀, Shimentai, 28-29 x 2001, coll. XZ; 1 ♂, Chebaling, 25-26 v 2002, coll. XZ; 1 ♂, 1 ♀, Liuxihe, 24-28 vi 2002, coll. XZ; 1 ♂, Heishiding, 06 vii 2002, leg. ML; 1 ♂, Chebaling, 27-28 vii 2002, coll. XZ; 1 ♂, Dazhuyuan, Luokeng, 18 ix 2002, leg. ML; 1 ♂, Nanling, 23-25 vii 2003, coll. XZ.

*Mnais mneme*

1 ♂, Wutongshan, 16-17 v 2001, leg. GR; 1 ♂, Sanyue, 21 iv 2001, leg. GR; 1 ♂ (no. 020323), Liuxihe, 14 iv 2002, coll. XZ; 2 ♂, 3 ♀, Xiangtoushan, 19 v 2002, coll. XZ; 1 ♂, Chebaling, 25-26 v 2002, coll. XZ.

*Neurobasis chinensis chinensis*

1 ♂, Heweishan, 04-05 v 1998, leg. GR; 1 ♂, Dadingshan (Nanling), 30 vi 2000, coll. KW; 1 ♂, Chebaling, 16-17 viii 2000, leg. ML; 1 ♂, Wutongshan, 16-17 v 2001, leg. GR; 7 ♂, 5 ♀, Shimentai, 27-28 x 2001, coll. XZ; 2 ♂, 7 ♀, Xiangtoushan, 19 v 2002, coll. XZ; 5 ♂, 3 ♀, Liuxihe, 24-28 vi 2002, coll. XZ; 4 ♂, 3 ♀, Gaozhou, 04 v 2002, coll. XZ; 4 ♂, 2 ♀, Xiaokeng, 26 v 2002, coll. XZ; 3 ♂, 1 ♀, Chebaling, 25-26 v 2002, coll. XZ; 1 ♂, 2 ♀, Baiyong, 03 v 2002, coll. XZ.

*Indocypha katharina*

1 ♀, Quncaitang, Luokeng, 18 ix 2002, leg. ML.

*Libellago lineata*

1 ♂ (10130), Dawuling, 01-05 x 2001, coll. XZ.

*Rhinocypha chaoi*

1 ♂, Longtanjiao (Nanling), 02 vii 2000, coll. KW; 1 ♂, Chengjia, 04 vii 2000, coll. KW; 1 ♂, Longdoushe, 28 vii 2002, coll. XZ; 1 ♂, Heishiding, 06 vii 2002, leg. ML; 1 ♂, Nankunshan, 07 viii 2004, coll. KW.

*Rhinocypha drusilla*

1 ♀ Guanyinshan, 11 viii 2000, leg ML; 1 ♂, Shimentai, 13 viii 2000, leg ML.

*Rhinocypha perforata perforata*

1 ♂, Wutongshan, 16-17 v 2001, leg. GR; 1 ♂, Gaozhou, 04 v 2002, coll. XZ; 1 ♂, Fengxi, 28-29 vii 2003, coll. XZ; 1 ♂, Qimuzhang, 31 vii 2003, coll. XZ; 1 ♂, Nanling, 23-25 vii 2003, coll. XZ.

*Anisopleura qingyuanensis*

1 ♂, Henglongbei (Nanling), 28 vi 2000, coll. KW; 1 ♂, Longtanjiao (Nanling), 2 vii 2000, coll. KW; 1 ♂, Chengjia, 04 vii 2000, coll. KW; 1 ♂, Maoping (Nanling), 06 vii 2000, coll. KW; 1 ♂, Chebaling, 16-17 viii 2000, leg. ML; 9 ♂, Chebaling, 25-26 v 2002, coll. XZ; 3 ♂, Chebaling, 16 viii 2000, leg. ML; 1 ♂, Chebaling, 27-28 vii 2002, coll. XZ; 1 ♂, Longdoushe, 28 vii 2002, coll. XZ.

*Bayadera melanopteryx*

1 ♂, Longtanjiao (Nanling), 02 vii 2000, coll. KW; 1 ♂, Chengjia, 04 vii 2000, coll. KW; 1 ♂, Maoping (Nanling), 06 vii 2000, coll. KW; 1 ♂, 1 ♀, Shimentai, 13 viii 2000, leg. ML; 1 ♂, Chebaling, 16 viii 2000, leg. ML; 1 ♂, Nanling, 23-25 vii 2003, coll. XZ; 3 ♂, Nankunshan, 07 viii 2004, coll. KW.

*Euphaea decorata*

1 ♂, Heweishan, 04-05 v 1998, leg. GR; 1 ♂, Guanyinshan, 11 viii 2000, leg ML; 1 ♂, Chebaling, 16-17 viii 2000, leg. ML; 1 ♂, Wutongshan, 16-17 v 2001, leg. GR; 1 ♂, Dazhuyuan, Luokeng, 18 ix 2002, leg. ML; 41 ♂, 14 ♀, Xiangtoushan, 19 v 2002, coll. XZ; 4 ♂, Baiyong, 01-03 v 2002, coll. XZ; 3 ♂, Gaozhou, 05 v 2002, coll. XZ; 10 ♂, 7 ♀, Chebaling, 25-26 v 2002, coll. XZ; 1 ♂, Chebaling, 27-28 vii 2002, coll. XZ; 2 ♂, 1 ♀, Longdoushe, 28 vii 2002, coll. XZ; 1 ♂, Qimuzhang, 31 vii 2003, coll. XZ; 1 ♂, Dinghushan, 11 viii 2005, coll. KW.

*Megalestes heros*

1 ♀, Henglongbei (Nanling), 28 vi 2000, coll. KW; 1 ♀, Maoping (Nanling), 06 vii 2000, coll. KW; 1 ♂, Nanling 23-25 vii 2003, coll. XZ; 1 ♂, Nanling, 23-25 vii 2003, coll. XZ; 1 ♀, Nanling, 04 viii 2004, coll. KW.

*Lestes praemorsus praemorsus*

1 ♂, Qixingkeng, 29 iv 1998, leg. GR; 1 ♂, Shimentai, 28-30 iii 2003, coll. XZ; 1 ♀, Shimentai, 05 xi 2005, coll. KW.

*Agriomorpha fusca*

1 ♂, Baiyong, 03 v 1998, leg. GR; 1 ♂, Dinghushan, 06 v 1998, leg. GR; 1 ♂, Dinghushan, 06 iv 2000, coll. GR; 1 ♂, Longtanjiao (Nanling), 02 vii 2000, coll. KW; 1 ♂, Maoping (Nanling), 06 vii 2000, coll. KW; 1 ♂, Wutongshan, 16-17 v 2001, leg. GR; 1 ♂, 1 ♀, Heishiding, 06 vii 2002, leg. ML; 1 ♂, Chengjia, 25 vii 2002, coll. XZ.

*Philosina alba*

2 ♂ (021447 & 021398), Dinghushan, 12 v 2002, coll. XZ.

*Rhipidolestes chaoi*

2 ♂, 1 ♀, Dadingshan (Nanling), 30 vi 2000, coll. KW.

*Rhipidolestes truncatidens*

1 ♀, Xiaohuangshan (Nanling), 27 vi 2000, coll. KW; 1 ♂, Henglongbei (Nanling), 28 vi 2000, coll. KW; 1 ♂, Longtanjiao (Nanling), 03 vii 2000, coll. KW; 1 ♂, 1 ♀, Maoping (Nanling), 06 vii 2000, coll. KW; 1 ♀, Shiziping (Nanling), 07 vii 2000, coll. KW; 1 ♂ (24941), Xiangtoushan, 11 v 2004, coll. XZ.

*Aciagrion tillyardi*

1 ♂, Dinghushan, 06 iv 2000, leg. GR; 1 ♂, 1 ♀, Heishiding, 06 vii 2002, leg. ML.

*Agriocnemis femina oryzae*

1 ♂, Qimuzhang, 31 vii 2003, coll. XZ; 5 ♂, 1 ♀, Nanling, 04 viii 2004, coll. KW.

*Ceriagrion auranticum ryukyuanum*

1 ♂, Qixingkeng, 30 iv 1998, leg. GR; 2 ♂, Xiangtoushan, 19 v 2002, coll. XZ; 1 ♀, Xiaokeng, 26 v 2002, coll. XZ; 1 ♀, Tianluhu, 23-24 vi 2003, coll. XZ; 1 ♀, Baiyong, 04 v 2002, coll. XZ; 1 ♂, Nanling, 23-25 vii 2003, coll. XZ.

*Ceriagrion azureum*

1 ♂, ♀, Chebaling, 12 v 1994, coll. KW; 1 ♂ (022111), Chebaling, 26 v 2002, coll. XZ; 1 ♂, Heishiding, 06 vii 2002, leg. ML; 1 ♂, Tianluhu, 23-24 vi 2003, coll. XZ.

*Ceriagrion fallax fallax*

1 ♂, Henglongbei (Nanling), 28 vi 2000, coll. KW; 1 ♂, Dadingshan (Nanling), 30 vi 2000, coll. KW; 1 ♂, Chebaling, 16-17 viii 2000, leg. ML; 1 ♂, Dachouding, 18 iv 2001, leg. GR; 1 ♂, Chengjia, 25 vii 2002, coll. XZ; 1 ♂, Nanling, 23-25 vii 2003, coll. XZ.

*Ceriagrion melanurum*

1 ♂, Sigian, Shixing, 20 vii 2002, leg. TX.

*Ischnura* sp. (*rufostigma* Selys, 1876 - group)

1 ♂, Qixingkeng, 29 iv 1998, leg. GR; 10 ♂ (020563), Dawuling, 02 v 2002, coll. XZ; 1 ♂, Nanling, 23-25 vii 2003, coll. XZ; 1 ♂, Shimentai, 04 xi 2005, coll. KW.

*Ischnura senegalensis*

1 ♂, Chebaling, 16-17 viii 2000, leg. ML.

*Paracercion melanotum*

1 ♂, Qixingkeng, 01 v 1998, leg. GR; 1 ♂, Dinghushan, 06 iv 2000, leg. GR; 1 ♂, Zhuhai, 07 vi 2002, leg. ML; 2 ♂, Nanling, 23-25 vii 2003, coll. XZ; 1 ♂, Nanling, 23-25 vii 2003, coll. XZ.

*Pseudagrion microcephalum*

1 ♂, 1 ♀, Shimentai, 04 xi 2005, coll. KW.

*Pseudagrion pruinsum fraseri*

1 ♂, Qixingkeng, 30 iv 1998, leg. GR; 1 ♂, Shimentai, 13 viii 2000, leg. ML; 7 ♂, 5 ♀, Xiangtoushan, 19 v 2002, coll. XZ; 1 ♂, Heishiding, 08 vii 2002, leg. ML; 1 ♂, Qimuzhang, 31 vii 2003, coll. XZ; 1 ♂, Luofushan, 08 viii 2004, coll. KW; 1 ♂, Dinghushan, 11 viii 2005, coll. KW.

*Pseudagrion rubriceps*

1 ♂, Dinghushan, 11 viii 2005, coll. KW; 1 ♂, Shimentai, 04 xi 2005, coll. KW.

*Pseudagrion spencei*

2 ♂, Qixingkeng, 01 v 1998, leg. GT; 1 ♂, 1 ♀, Shimentai, 13 viii 2000, leg. ML; 1 ♂, Shimentai, 28-29 x 2001, coll. XZ; 1 ♂, 1 ♂, Shimentai, 03 xi 2005, coll. KW.



*Calicnemia sinensis*

1 ♂, Longtanjiao (Nanling), 03 vii 2000, coll. KW; 1 ♂, 1 ♀, Chengjia, 04 vii 2000, coll. KW; 5 ♂, 1 ♀, Chebaling, 25-26 v 2002, coll. XZ; 1 ♂, Tianluhu, 23-24 vi 2003, coll. XZ; 2 ♂, Baiyong, 03 v 2002, coll. XZ; 4 ♂, Liuxihe, 24-28 vi 2002, coll. XZ; 1 ♂, Tianluhu, 23-24 vi 2003, coll. XZ; 1 ♂, 1 ♀, Nanling, 04 viii 2004, coll. KW.

*Coeliccia cyanomelas*

1 ♂, Qixingkeng, 01 v 1998, leg. GR; 1 ♂, Baiyong, 03 v 1998, leg. GR; 1 ♂, 1 ♀, Dadingshan (Nanling), 30 vi 2000, coll. KW; 1 ♂, Longtanjiao (Nanling), 2 vii 2000, coll. KW; 1 ♂, 1 ♀, Chengjia, 04 vii 2000, coll. KW; 1 ♂, Maoping (Nanling), 06 vii 2000, coll. KW; 1 ♂, Guanyinshan, 11 viii 2000, leg. ML; 1 ♂, Shimentai, 13 viii 2000, leg. ML; 1 ♂, Chebaling, 16-17 viii 2000, leg. ML; 1 ♂, Wutongshan, 16-17 v 2001, leg. GR; 29 ♂, 4 ♀, Chebaling, 25-26 v 2002, coll. XZ; 2 ♂, 5 ♀, Xiaokeng, 26 v 2002, coll. XZ; 1 ♂, Dawuling, 03 vii 2002, leg. ML; 1 ♂, Nanling, 23-25 vii 2003, coll. XZ; 1 ♂, Chebaling, 27-28 vii 2002, coll. XZ; 1 ♂, Fengxi, 28-29 vii 2003, coll. XZ; 1 ♂, Qimuzhang, 31 vii 2003, coll. XZ; 1 ♂, Luofushan, 08 viii 2004, coll. KW.

*Copera ciliata*

1 ♂, Qixingkeng, 01 v 1998, leg. GR; 1 ♂, Chebaling, 16-17 viii 2000, leg. ML; 1 ♂, Shimentai, 28-29 x 2001, coll. XZ; 1 ♂, Xiaokeng, 26 v 2002, coll. XZ; 1 ♀, Xiangtoushan, 19 v 2002, coll. XZ; 1 ♂, Baiyong, 03 v 2002, coll. XZ; 1 ♂, Luofushan, 08 viii 2004, coll. KW.

*Copera marginipes*

1 ♂, Qixingkeng, 01 v 1998, leg. GR; 1 ♂, Wutongshan, 16-17 v 2001, leg. GR; 1 ♂, Shimentai, 28-29 x 2001, coll. XZ; 1 ♂, Baiyong, 03 v 2002, coll. XZ; 4 ♂, 3 ♀, Xiangtoushan, 19 v 2002, coll. XZ; 1 ♂, Nanling, 23-25 vii 2003, coll. XZ; 1 ♂, Fengxi, 28-29 vii 2003, coll. XZ; 1 ♂, Qimuzhang, 31 vii 2003, coll. XZ; 1 ♂, Shimentai, 04 xi 2005, coll. KW.

*Indocnemis orang*

2 ♀, Henglongbei (Nanling), 28 vi 2000, coll. KW; 1 ♂, Dadingshan (Nanling), 30 vi 2000, coll. KW; 1 ♂, Longtanjiao (Nanling), 02 vii 2000, coll. KW; 1 ♂, Chengjia, 05 vii 2000, coll. KW; 1 ♂, Maoping (Nanling), 06 vii 2000, coll. KW; 1 ♂, 1 ♀, Shimentai, 13 viii 2000, leg. ML; 1 ♂, Shimentai, 28-29 x 2001, coll. XZ; 1 ♂, Shimentai, 28-30 iii 2003, coll. XZ; 5 ♂, 3 ♀, Nanling, 23-25 vii 2003, coll. XZ.

*Drepanosticta brownelli*

1 ♂, 1 ♀, Baiyong, 03-06 v 1998, leg. GR; 1 ♂, Dinghushan, 06 iv 2000, leg. GR.

*Drepanosticta hongkongensis*

1 ♂, Pengshan (Nanling), 01 vii 2000, coll. KW; 1 ♂, 1 ♀, Shiziping (Nanling), 07 vii 2000, coll. KW; 1 ♂, Wutongshan, 16-17 v 2001, leg. GR.

*Protosticta beaumonti*

1 ♀, Qixingkeng, 01 v 1998, leg. GR; 1 ♂, Dinghushan, 06 v 1998, leg. GR; 3 ♂, Longtanjiao (Nanling), 02 vii 2000, coll. KW; 1 ♂, Heishiding, 05 vii 2002, leg. ML.

*Protosticta taipokauensis*

1 ♂, Pengshan (Nanling), 01 vii 2000, coll. KW; 1 ♂, Liuxihe, 13 iv 2002, coll. XZ; 1 ♀, Xiangtoushan, 19 v 2002, coll. XZ; 1 ♂, Chebaling, 25-26 v 2002, coll. XZ; 1 ♀, Fengxi, 28-29 vii 2003, coll. XZ.

*Sinosticta ogatai*

1 ♂, Wutongshan, 16-17 v 2001, leg. GR.

*Prodasineura autumnalis*

3 ♂, Qixingkeng, 30 iv 1998, leg. GR; 1 ♂, Chengjia, 04 vii 2000, coll. KW; 1 ♂, Guanyinshan, 11 viii 2000, leg. ML; 2 ♀, Heishiding, 08 vii 2002, leg. ML; 1 ♂, Qimuzhang, 31 vii 2003, coll. XZ; 1 ♂, Dinghushan, 11 viii 2005, coll. KW; 1 ♂, Shimentai, 04 xi 2005, coll. KW.

*Prodasineura croconota*

1 ♂, Dinghushan, 06 iv 2000, leg. GR; 1 ♂, Nankunshan, 07 viii 2004, coll. KW.

## CALOPTERYGIDAE

*Atrocalopteryx atrocyana* (Fraser, 1935) stat. nov.  
(Figs 3c, d; Plate 1b)*Calopteryx atrocyana* Fraser; — Hua (2000: 6, China).**Specimens:** 5 ♂, Nanling, 10 viii 2005, coll. KW; 4 ♂, Shimentai, 05 xi 2005, coll. KW.

**Remarks:** van Tol & Rozendaal (1995) considered *atrocyana*, described from two males and a single female from 'Tonkin' (northern Vietnam), to be a probable synonym of *Calopteryx grandaeva* Selys, 1853, which was described from a single female from China. The exact type locality of *C. grandaeva* is uncertain. However, Hämäläinen (2005), who studied the *grandaeva* type specimen, deduced the type locality to be an island off the Zhejiang coast (Zhoushan), since Melly was the collector and he mainly collected odonates in China from this island. Since the type female *C. grandaeva* wing lacks a pterostigma and its wing breadth dimensions, although fairly broad, nevertheless overlap with the wing breadth dimensions for specimens of *A. atrata* collected from Fujian, Hämäläinen (2005) considered *grandaeva* must be treated as a synonym of *atrata*. *A. atrata*, which was also described from Zhejiang Province, China, is a metallic-green bodied species with black, narrow wings. The breadth to length Hw ratios of two *atrata* female specimens examined from Guizhou, southwest China are 1 : 3.4 and 1 : 3.65 (see Fig. 3a). The female type *C. grandaeva* has no indication of a false pterostigma and according to Hämäläinen (2005) its wing venation is identical to *atrata*. This specimen has a length to breadth Hw ratio of ca 1 : 3.3 (see Fig. 3b). The head, thorax and body of *atrocyana* are dark metallic blue with broad, dark blue, finely white-edged wings. The *atrocyana*

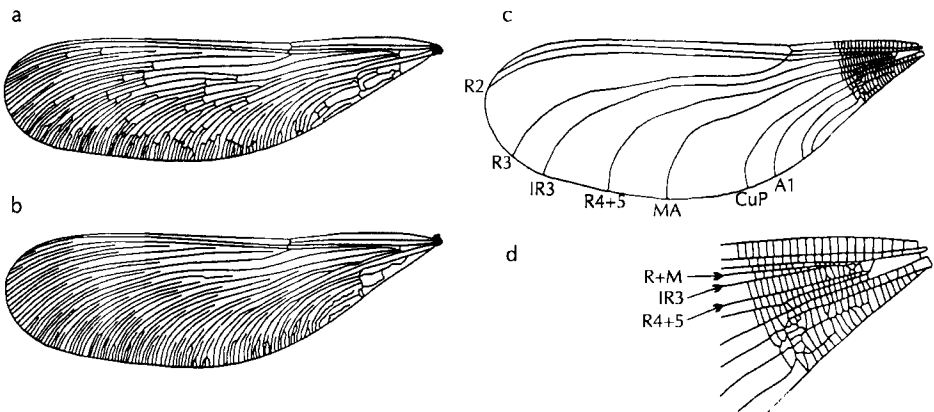


Figure 3: *Atrocalopteryx* hindwings — (a) ♀ *A. atrata*, Guizhou; (b) holotype ♀ "*Calopteryx grandaeva*" syn. *A. atrata*; (c) ♂ *A. atrocyana*, Guangdong; (d) same, illustrating R+M & IR3 detaching from R4+5.

wing length to breadth ratio is much broader than both *atrata* and *grandaeva*. Male *atrocyana* from Guangdong has a length to breadth ratio ca 1 : 2.8 to 1 : 2.9 (see Figs 3c, d).

When erecting the genus *Atrocalopteryx*, based on an analysis of Caloptera genetic markers, Dumont et al. (2005) remarked the genus *Atrocalopteryx* was characterised by males and females with no pterostigma, narrow wings, very small or absent post-ocular tubercles and veins R2 and IR3 detaching together from R4+5 (in *Calopteryx* R2 detaches from R+M). KW has examined European *Calopteryx* specimens and compared Chinese *atrata* with *atrocyana*. As stated by Dumont et al. (2005) R2 and IR3 detach from R+M in *Calopteryx*. In contrast R2 and IR3 in *A. atrata* (Guizhou specimens) detach from R4+5. R2 and IR3 also detach from R4+5 (see Fig. 3d) in *atrocyana*. The arc of *atrocyana* is located closer to the wing base than in *atrata*. R2 and IR3 also detach from R4+5 in *C. coomani* (Fraser, 1935) from China and Vietnam. A specimen of *atrocyana* has been sent to Henri Dumont for a genetic comparison with other members of the Caloptera, including *coomani*. M. Hämäläinen (pers. comm. 2005) pointed out that *atrata*, *atrocyana* and *coomani* all possess distinctly curved hind tibias whereas members of true *Calopteryx* have straight tibias. It is probable both *atrocyana* and *coomani* belong to *Atrocalopteryx*.

*A. atrocyana* was found associated with a small, man-made feeder streams adjacent to rice paddies and horticultural farmland near the base of steep mountains.

**Distribution:** China (Guangdong), Vietnam.

### *Caliphaea nitens* Navás, 1934 (Plate IIa)

*Caliphaea nitens* Navás; — Hämäläinen (2004: 374-376, figs 1, 3, Fujian).

**Specimens:** 1 ♂, Henglongbei (Nanling), 28 vi 2000, coll. KW; 1 ♂, Pengshan (Nanling), 1 vii 2000, coll. KW; 1 ♂, Longtanjiao (Nanling), 02 vii 2000, coll. KW; 1 ♂, Longtanjiao (Nanling), 03 vii 2000, coll. KW; 1 ♂ Dawuling, 01-05 v 2001, coll. XZ; 1 ♂, Dawuling, 30 vi 2002, leg. ML; 3 ♂, Gaozhou, 04 v 2002, coll. XZ; 1 ♂, Chebaling, 25-26 v 2002, coll. XZ; 3 ♂, 1 ♀, Dawuling, 03 vii 2002, leg. ML; 1 ♂, 1 ♀, Nanling, 04 viii 2004, coll. KW.

**Remarks:** Navás (1934) described *C. nitens* and *Bayadera melania* in the same publication. As pointed out by Hämäläinen (2004) it appears the type labels of these two species probably became mixed up and although Chao (1962) suspected as such he nevertheless synonymised *C. nitens* with *Bayadera melanopteryx*. Davies & Yang (1996) treated *nitens* as a synonym of *C. consimilis* McLachlan, 1984. Hämäläinen (2004) reinstated *nitens* as a good species based on a study of Fujian specimens and the original description of the type *nitens* from Zhejiang. The inferior appendages of *nitens* have clubbed apical tips and their inside edges abut and are parallel to each other. The clubbed apical tips of *consimilis* abut each other at their bases but are widely divergent at their tips. The tips of the inferior appendages of male N Guangdong specimens belong to *nitens*. For a detailed comparison see Hämäläinen (2004).

**Distribution:** China (Fujian, Guangdong, Guangxi, Zhejiang).

## *Mnais andersoni tenuis* Oguma, 1913

*Mnais andersoni* McLachlan in Selys, 1873; — Hua (2000: 6, Burma, Thailand, Vietnam; Guangdong, Hainan, Henan, Sichuan, Taiwan, Yunnan, Zhejiang).

*Mnais icteropectera* nec Fraser, 1929; — Zhang (1999: 193, fig. 24-7, Fujian, Guangdong, Jiangxi, Yunnan); — Hua (2000: 6, Burma; Fujian, Guangdong, Hubei, Jiangxi, Yunnan, Zhejiang).

*Mnais auripennis* Needham, 1930; — Hua (2000: 6, Fujian, Guangdong, Jiangxi, Sichuan, Yunnan, Zhejiang). Junior synonym.

**Specimens:** 1 ♂, 1 ♀, Baiyong, 06 v 1998, leg. GT; 1 ♂, Henglongbei (Nanling), 28 vi 2000, coll. KW; 1 ♂, Pengshan (Nanling), 01 vii 2000, coll. KW; 3 ♂, Maoping (Nanling), 06 vii 2000, coll. KW; 1 ♂, Dachouding, 18 iv 2001, leg. GR; 1 ♂, San-yue, 21 iv 2001, leg. GR; 1 ♂ (no. 020231), Liuxihe, 13 iv 2002, coll. XZ; 1 ♂, Liuxihe, 14 iv 2002, coll. XZ; 1 ♂, Shimentai, 28-30 iii 2003, coll. XZ; 1 ♂, Nanling, 23-25 vii 2003, coll. XZ; 1 ♂, Fengxi, 28-29 vii 2003, coll. XZ.

**Remarks:** *Mnais* species are notoriously difficult to elucidate and there is still some uncertainty regarding the status of *andersoni* and *tenuis*. *M. andersoni* specimens from the type locality in Yunnan, and *tenuis* from its type locality in Taiwan, look like different species. Initially, when reviewing Asian *Mnais*, Asahina (1975b) treated *andersoni* and *tenuis* as distinct species but later (Asahina 1975c) downgraded *tenuis* to a subspecies of *andersoni* since intermediate forms of *andersoni* and *tenuis* occur throughout their range in Vietnam and Laos. Nominate *andersoni* occurs in W China, Burma, Laos, Thailand and Vietnam. *M. andersoni tenuis* occurs in N Guangdong. Hämäläinen (2004) treats Fujianese specimens as *M. tenuis*. Hämäläinen (2004) also reported that Sui & Sun (1984) erroneously recorded *icteropectera* from Guangdong, Jiangxi, Yunnan and Zhejiang. Actually Sui & Sun (1984) recorded *earnshawii* Williamson from Hainan, Jiangxi, Yunnan and Zhejiang and did not list *icteropectera*. However, Asahina (1975a) synonymised *earnshawii* with *andersoni* and suggested *icteropectera* might also be a synonym of *andersoni*. Asahina (1975b) also synonymised *M. auripennis* with *M. tenuis*.

## *Vestalis miao* Wilson & Reels, 2001

(Plate IIIa)

*Vestalis miao* Wilson & Reels, 2001: 154-156, figs 2-6 [type: Diaoluoshan, Hainan]; — Wilson & Reels (2003: 245, Guangxi); — Chan et al. (2004a: 19, Heishiding, Guangdong).

**Specimens:** 1 ♂, Heishiding, 06 vii 2002, leg. ML; 5 ♂, Shimentai, 05 xi 2005, coll. KW.

**Remarks:** Guangdong specimens collected from Shimentai are slightly smaller than Hainan specimens and have amber tinted wings, whereas Hainan *miao* wings are hyaline. In addition the inferior appendages are slightly smaller in Guangdong *miao* and the superior appendages are finer. There is a small spine on Hainan specimens at the distal latero-ventral margin of S10. This feature is only present on a single Guangdong male.

**Distribution:** China (Hainan, Guangdong and Guangxi).

*Vestalis velata* Ris, 1912  
(Plate IIIb)

*Vestalis smaragdina velata* Ris, 1912: 56-57 [type: Tsa-Yiu-San, Guangdong].  
*Vestalis virens* Needham, 1930: 199 [type: Fujian]. Junior synonym.  
*Vestalis velata* Ris; — Hämäläinen (2004: 382-383, fig. 5, Fujian).

**Specimens:** 1 ♀, Shimentai, 13-14 viii 2000, leg. ML; 1 ♂, 1 ♀, Shimentai, 28-29 x 2001, coll. XZ; 1 ♂, Qimuzhang, 31 vii 2003, coll. XZ; 6 ♂, Shimentai, 05 xi 2005, coll. KW.

**Remarks:** Hämäläinen (2004) raised Ris's *smaragdina velata* subspecies to species status, separating *velata* from *smaragdina* Selys, 1879 based on its uniformly brownish tinted, broader wings, proportionally longer male caudal appendages and superior appendages with slight, median expansion. According to Hämäläinen the female *velata* is distinguished from *smaragdina* by the structure of the ovipositor valves, which in *smaragdina* possess sharp, ventral spines.

**Distribution:** China (Fujian, Guangdong, Guangxi, Jiangxi and Zhejiang).

*Vestalis venusta* Hämäläinen, 2004

*Vestalis smaragdina velata* not of Ris, 1912; — Wilson & Reels (2003: 245-246, Guangxi).

**Specimens:** 1 ♂, 1 ♀, Chengjia, 05 vii 2000, coll. KW; 1 ♂, Guanyinshan, 11 viii 2000, leg. ML; 1 ♂, Guanyinshan, 12 viii 2000, leg. BH; 1 ♂, Quncaitang, Luokeng, 18 ix 2002, leg. BH.

**Remarks:** The male hyaline-winged *V. venusta* has superior appendages which are shorter than those of *smaragdina* and the apical interior protrusion is closer to the tip (see Hämäläinen 2004: figs 6-9).

**Distribution:** China (Anhui, Fujian, Guangdong, Guangxi, Jiangxi and Sichuan, Zhejiang).

EUPHAEIDAE

*Bayadera bidentata* Needham, 1930  
(Figs 4a-m)

*Bayadera bidentata* Needham, 1930: 218, pl. 16 (fig. 7) [type: Zhejiang; paratypes: Guangxi]; — Wilson & Reels (2003: 249, fig. 13, Guangxi); — Davies & Yang (1996: 151-153 (key), figs 29, 30, Zhejiang and Hubei).

**Specimens:** 1 ♂, Dadingshan (Nanling), 30 vi 2000, coll. KW; 1 ♂, Chengjia, 04 vii 2000, coll. KW; 1 ♂, Maoping (Nanling), 06 vii 2000, coll. KW; 1 ♂, Sanyue, 18 iv 2001, leg. GR; 1 ♀, Heishiding, 06 vii 2002, coll. XZ; 1 ♂ (020414), Chebaling, 21 iv 2002, coll. XZ.

**Redescription of male:** Blackish, clear-winged *Bayadera* with yellow marked synthorax, when teneral; finely marked pale orange or entirely blackish when mature.

Head matt-black above, with sides of face and base of mandibles shiny, pale greenish-yellow maturing to blue (Fig. 4a). Labrum pale greenish-orange maturing to blue with fine black distal margin and basal margins; fine black basal margin also with small central triangle. Labium dark reddish-black with pale cream sides when mature. Occipital margin with many long black hairs. Ocelli reddish-brown. Prothorax black with pair of large yellow spots mid-dorsally maturing to dull orange. Synthorax matt black with yellow markings as shown in Figure 4b. Thoracic yellow markings narrow and fade to pale orange with maturity (Fig. 4c). Legs black. Wings narrow and hyaline with brown pterostigma (Figs 4e, f). Abdomen matt black with small squarish, pale yellow spot at side of S1 and elongate yellow spot at side of S2. Penile organ as shown in Figures 4g, h. Caudal appendages as illustrated in Figures 4i-k. Superior appendages possess a prominent, inner basal peg, which is directed slightly ventrally, and a well developed inner, median stout spine or tubercle. Inferior appendages long, approximately half the length of the superior appendages.

**Redescription of female:** Marked similar to the male with more prominent bright orange thoracic markings (see Fig. 4d).

**Measurements [mm]:** abdomen (incl. anal appendages) 40.0, superior appendage 1.8, Hw 33.5.

**Remarks:** Figures 4l, m depict the type from Zhejiang. Davies & Yang (1996) described *B. strigata* and produced a key for all species of *Bayadera* in the same publication. They separated *B. bidentata* from *strigata* in a couplet which is reproduced here below:

1. Thorax and abdomen of male black; metathorax of female marked with yellow stripe on second & third suture ..... *B. bidentata* Needham, 1930
- 1'. Thorax and abdomen of male with yellow; metathorax of female with three irregular yellow stripes, the former two connected below and the latter two connected above ..... *B. strigata* Davies & Yang, 1996

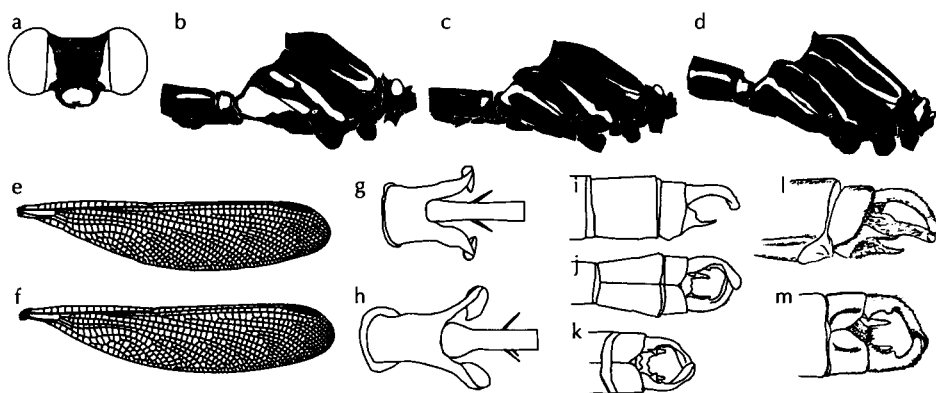


Figure 4: *Bayadera bidentata* — (a) head, frontal; (b) thorax, lateral, juvenile ♂; (c) same, mature ♂; (d) same, ♀; (e, f) Hw ♂; (g, h) ♂ penile organ, ventral; (i, j) caudal appendages, lateral; (j, k) same, dorsal; (l, m) same, type, Zhejiang, from Davies & Yang (1996). — Figures (a, b, e, g, i, j) refer to a juvenile ♂ from Dachouding, Guangdong; (c, f, h, k) to a mature ♂ from Guangxi.

Based on many specimens of both male and female *bidentata* obtained from Guangxi and Guangdong, KW is unable to separate *bidentata* from the type description and drawings of *strigata*. There are no overt differences in structure. The penile organ and the shape of the caudal appendages are similar and within natural variation exhibited within populations. D.A.L. Davies and B. Yang obtained on loan the very dark, entirely blackish holotype male *bidentata* for comparison with *strigata* – note Needham's description of *bidentata* was based on three specimens; a male from Zhejiang and a pair from Guangxi. The synthorax of fresh, mature male *bidentata* specimens from Guangxi are not entirely black and these have very similar pattern to *strigata* (cf. Davies & Yang 1996: 147, figs 6-11). It is possible that *strigata* is a synonym of *bidentata*.

### *Bayadera continentalis* Asahina, 1973

*Bayadera hyalina* not of (Selys, 1879); — Ris (1912: 52, Tsa-Yiu-San, Guangdong).  
*Bayadera brevicauda continentalis* Asahina, 1973: 455-457, figs 40-41, 44-49 [type: Fujian].

*Bayadera continentalis* Asahina — Hämäläinen (2004: 390-391, Fujian).

**Specimens:** 1 ♂, Chebaling, 11 v 1996, coll. KW; 1 ♂, Mangshan, Hunan, (Nanling), 26 vi 2000, coll. KW; 1 ♂, Chebaling, 25-26 v 2002, coll. XZ.

**Distribution:** China (Guangdong, Guanxi, Fujian, Hunan and Zhejiang).

### *Euphaea superba* Kimmins, 1936 (Plate VIa)

*Euphaea superba* Kimmins, 1936: 147-149, fig. 1-4 [type: Tonkin]; — Wilson & Reels (2003: 253, figs 28-32, Guangxi).

**Specimens:** 10 ♂, Xiaokeng, 26 v 2002, coll. XZ; 1 ♂, Chebaling, 25-26 v 2002, coll. XZ; 1 ♂, Liuxihe, 24-28 vi 2002, coll. XZ; 1 ♂, Chebaling, 27-28 vii 2002, coll. XZ; 5 ♂, Nanling, 10 viii 2005, coll. KW.

**Remarks:** The historical records of *E. opaca* specimens collected from Hong Kong (Lai 1971; Hill 1982) may have been misidentifications of *E. superba*, but this possibility remains to be confirmed. Neither *opaca* nor *superba* have been recorded from Hong Kong in recent years. Asahina (1973: 453, figs 36, 37) illustrated the wings of both male and female *opaca*. The female *opaca* is clearly shown with hyaline wings. A photo provided by Lai (1971) of a coupled pair of *opaca* indicates the female most probably has clear wings. The colour of female *superba* wings is unknown. In Guangdong *superba* frequents broad, shallow, rocky substrated streams in agricultural areas at the base mountainous areas.

**Distribution:** China (Guangdong and Guangxi) and Vietnam.

## SYNLESTIDAE

*Megalestes discus* Wilson, 2004  
(Plate VII)

*Megalestes discus* Wilson, 2004b: 424-427, figs 4-8 [type: Mangshan (Nanling), Hunan Province].

**Specimens:** 1 ♂, Nanling (Guangdong), 24°56'N, 113°00'E, 04 viii 2004, coll. KW.

**Distribution:** China (Hunan & Guangdong).

**Remarks:** A key to the 10 species of Chinese *Megalestes* is provided below.

*Megalestes distans* Needham, 1930

*Megalestes distans* Needham, 1930: 231, pl. 16 (fig. 20) [type: Guangxi/Sichuan].

**Specimens:** 2 ♂ (nos 020586, 020708), Dawuling, 02 v 2002, coll. XZ.

**Distribution:** China (Guangdong, Guangxi, Hubei, Sichuan and Yunnan) and Vietnam.

Key to male Chinese *Megalestes*

1. Large size (abdomen > 56 mm, Hw 42-46 mm) with S3-7 yellowish-brown or reddish-orange. Note S3-6 of *maai* have a hint of reddish but abdomen less than 56 mm. Fujian, Guangdong, Sichuan, Zhejiang ..... *M. heros* Needham, 1930
- 1'. Large or small with abdomen dark blackish-brown or metallic green ..... 2
2. Occipital margin with small transverse yellow spot; Hw 35.0 mm; dorsal-lateral tooth, at base of inferior appendage, greatly bulged below; prothorax with characteristic yellow pattern with anterior and posterior lobes mainly yellow and central lobe yellow centrally. Sichuan, Yunnan and India (Assam) ..... *M. micans* Needham, 1930
- 2'. Occipital margin without transverse yellow spot ..... 3
3. Dorsum of synthorax metallic green with broad pale yellow central stripe. Zhejiang ..... *M. suenisoni* <sup>1</sup>Asahina, 1956
- 3'. Dorsum of synthorax predominantly metallic green ..... 4
4. Inferior appendages without a basal pair of stout spines or robust teeth; superior appendages with dorso-basal disc-like structure; Hw 32-35 mm. Guangdong, Hunan ..... *M. discus* Wilson, 2004
- 4'. Inferior appendages with a basal pair of stout spines or robust teeth; base of superior appendages lacking dorsal disc-like structure ..... 5

<sup>1</sup>*M. suenisoni* was described from a single female with an abdomen length of 50 mm. The male *suenisoni* is unknown. Chao (1965) synonymised *suenisoni* with *heros*. As it is possible a small teneral male *suenisoni/heros* would key out here, the couplet is added as a safeguard.



5. Superior appendages predominantly pale brown or yellow (dark brown or blackish at base only) ..... 6
- 5'. Superior appendages dark brown or blackish throughout ..... 9
6. Prothorax mainly yellow with black T-shaped stripe dorso-lateral tooth of inferior anal appendage pointed apically; Hw 30 mm. Jiangxi .. *M. riccii* Navás, 1935
- 6'. Central lobe of prothorax predominantly dark metallic green or with more extensive dark metallic green or blackish markings ..... 7
7. Stout, uniformly curved superior appendages when viewed dorsally; basal spines of inferior appendages without bifurcated tips ..... 8
- 7'. Fine superior appendages with distinct kink internally and externally when viewed dorsally; basal spines of inferior appendages with bifurcated tips; Hw 31.5 mm. Guangxi ..... *M. tuska* Wilson & Reels, 2003
8. Robust basal teeth of inferior appendages directed dorso-caudad and slightly bulged at base; Hw 32.0 mm. Fujian ..... *M. chengi* Chao, 1947
- 8'. Robust basal teeth of inferior appendages directed mainly dorsally; Hw 30-35 mm. Taiwan ..... *M. maai* Chen, 1947
9. Inferior appendages with basal, dorso-lateral tooth, sharply pointed ..... 10
- 9'. Inferior appendages with basal, dorso-lateral tooth blunt; Hw 35-38 mm. Guangxi ..... *M. hui* Wilson & Reels, 2003
10. Pronotum with middle portion of middle lobe and whole of posterior lobe yellow; basal, dorso-lateral tooth of inferior anal appendage small and short; HW 45.0 mm. Sichuan ..... *M. omeiensis* Chao, 1965
- 10'. Pronotum with anterior margin of anterior lobe yellow and whole of posterior lobe yellow; dorso-lateral tooth of inferior anal appendage robust, prominent and sharp; HW 37-45 mm. Guangdong, Guangxi, Hubei, Sichuan and Yunnan and Vietnam ..... *M. distans* Needham, 1930

## LESTIDAE

### *Indolestes peregrinus* (Selys, 1916)

(Figs 5a-f)

*Lestes gracilis peregrinus* Selys; — Ris (1916: 14-16, fig. 2, pl. I/fig. 5 [type: Japan]).  
*Lestes extranea* Needham, 1930: 233, pl. 16 (fig. 15) (Jiangsu?). Junior synonym.  
*Lestes gracilis extraneus* Needham; — Schmidt (1931: 178, Zhejiang).  
*Lestes monteili* Navás, 1935: 90-91, figs 57a, b [type: Jiangxi]. Junior synonym.  
*Indolestes peregrinus* (Selys); — Asahina (1976: 2-4, figs 4-8, China [Fujian, Hubei, Jiangxi, Zhejiang], Korea and Japan); — Zhang (1999: 206, Fujian).

**Specimens:** 2 ♂, 28-30 iii 2003, Shimentai, coll. XZ; 1 ♀, Shimentai, 05 xi 2005, coll. KW; 1 ♀, Shimentai, 06 xi 2005, coll. KW.

**Remarks:** The thoracic markings of the female are identical to the male (Fig. 5a). Hw and Fw as figures (Figs 5b, c). The wing quadrangles of *Indolestes* are narrow, elongate, acutely pointed and differ in shape and size (Figs 5d, e). According to Fraser (1933) the genus *Indolestes* is characterized by posterior border of Fw three times as long as basal border and twice length of costal border, with the Hw six times as long as basal border and not quite twice length of costal border. In the case of *I. peregrinus* the basal border to posterior border proportions are exceeded but the Hw quadrangle is almost twice the length of the Fw quadrangle (Figs 5d, e). The dull brown coloured females were collected from evergreen tree foliage in mature forest at between 500 and 575 m. The males collected in March were coloured pale blue, black and pale brown below. The distal two thirds of S9, S10 and the superior appendages are pale blue (Fig. 5f).

**Distribution:** China (Fujian, Guangdong, Hubei, Jiangxi and Zhejiang), Japan and Korea.

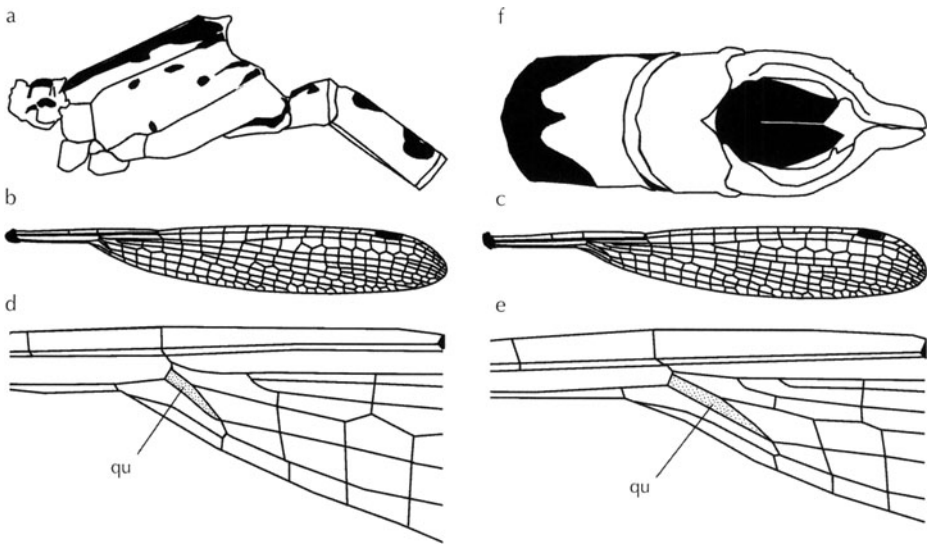


Figure 5: *Indolestes peregrinus*, from Guangdong — (a) ♀ thorax, lateral; (b) ♀ Fw, (c) ♀ Hw; (d) ♀ Fw quadrangle; (e) ♀ Hw quadrangle; (f) ♂ S8-10 and appendages, dorsal.

*Sinolestes edita* Needham, 1930  
(Figs 6a-e)

*Sinolestes edita* Needham, 1930: 243 [type: Zhejiang]; — Chao (1947: 21, Fujian); — Wilson (1999: 25, Dinghushan, Guangdong); — Wilson & Reels (2003: 259-260, figs 59, 60, Guangxi).

*Sinolestes ornata* Needham, 1930: 244 [type: Guangxi]. Junior synonym, cf. Chao (1947).

*Sinolestes truncata* Needham, 1930: 243 [type: Zhejiang]. Junior synonym, cf. Wilson & Reels (2003).

**Specimens:** 2 ♂, Dinghushan, 06 v 1998, leg. GR; 1 ♂, Longtanjiao (Nanling), 03 vii 2000, coll. KW; 1 ♂, sp. no. 020233, Liuxihe, 13 iv 2002, coll. XZ; 3 ♀, Liuxihe, 13 iv 2002, coll. XZ.

**Redescription of male:** Very large lestid with yellow antehumeral stripe and very short inferior appendage. Top of head, frons and labrum dark metallic green (Fig. 6a). Genae and base of mandibles pale yellow. Clypeus darkish with smudgy yellow colouration. Antennae blackish with outer face of pedicel pale yellow. Prothorax dark metallic green with broad pale yellow lateral stripe along its entire length (Fig. 6b). Dorsum of synthorax dark metallic green with prominent pale yellow antehumeral stripe, abutting the humeral suture, but falling short of the posterior border (Fig. 6b). Mesepimeron dark metallic green. Metepisternum pale yellow with posterior margin dark metallic green. Mesokatepisternum and metakatepisternum dark metallic green with ventral margins pale yellow. Metepimeron and metaposternum pale yellow. Coxae and trochanters pale yellow. Legs pale with blackish hue. Male specimens from Liuxihe with clear wings and large oval pterostigma coloured reddish-brown (Fig. 6c). Wings from two Dinghushan males and Nanling male with narrow, blackish-brown, apical cross-band below pterostigma. Abdomen dark blackish-brown with metallic green reflections. S1, S2 and S8 pale yellow below. S3-7 pale yellow area below which expands onto the dorsum at the base. S9-10 dark blackish-brown with ventral posterior third of S9 pale yellow (Fig. 6d). Caudal appendages dark blackish-brown.

**Redescription of female:** Similarly coloured to the male but with a broader pale yellow antehumeral stripe and ochreous-brown pterostigma. The pale markings on the abdomen are slightly darker than the male. S9 is massively expanded and predominantly coloured pale brownish-yellow (Fig. 6e).

**Measurements [mm]:** ♂ abdomen (incl. appendages) 58.0 - 60.0, superior appendages 2.0, Hw 41.0 - 42.5.

**Distribution:** China (Fujian, Guangdong, Guangxi and Zhejiang).

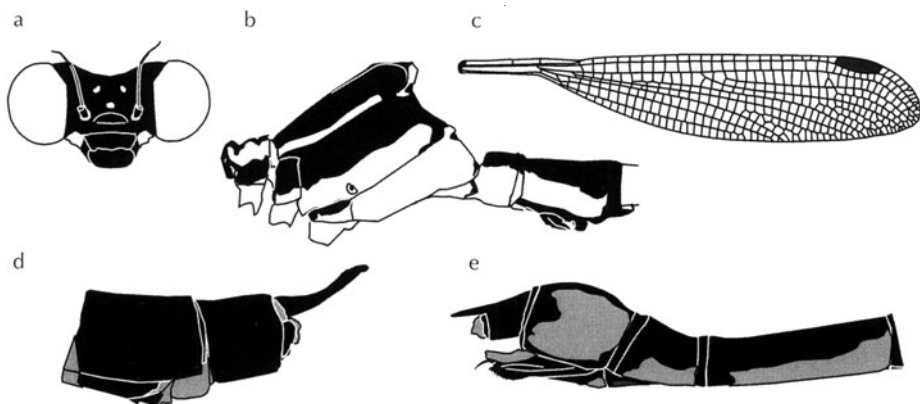


Figure 6: *Sinolestes edita* from Guangdong — (a) ♂ head, frontal; (b) ♂ thorax and base of abdomen, lateral; (c) ♂ Hw; (d) ♂ caudal tip of abdomen, lateral; (e) ♀ caudal abdomen, lateral.

## MEGAPODAGRIONIDAE

*Rhipidolestes cyanoflavus* Wilson, 2000  
(Figs 7a-c, 9u-x)

*Rhipidolestes cyanoflavus* Wilson; — Wilson (2003: 47-50, figs 8-12 [type: Baiyong, Guangdong].

**Specimens:** 2 ♂ (nos 010129, 010164), Dawuling, 01-05 x 2001, coll. XZ; 1 ♂ (020834), Gaozhou Reservoir, 04 v 2002, coll. XZ; 1 ♂, sp. no. 021004, Gaozhou Reservoir, 05 v 2002, coll. XZ.

**Remarks:** The male specimens showed no hint of the pale blue colour observed in live or in freshly preserved specimens. On re-examination of paratype specimens collected from Bai Yong, the pale blue colour had also faded to yellow. The face, thoracic pattern and Hw are illustrated in Figures 7a-c and caudal abdomen and penile organ in Figures 9u-x.

**Distribution:** China (Guangdong).

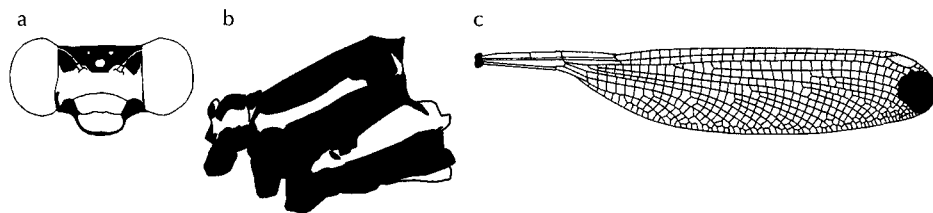


Figure 7: *Rhipidolestes cyanoflavus* ♂ from Guangdong — (a) head, frontal; (b) thorax, lateral; (c) Hw.

*Rhipidolestes janetae* Wilson, 1997  
(Figs 8a-f, 10l-r)

**Specimens:** 2 ♂ (nos 020257, 020267), 13 iv 2002, Liuxihe, coll. XZ; 2 ♀, 13 iv 2002, Liuxihe, coll. XZ; 1 ♂ (no. 024946), Xiangtoushan, 11 v 2004, coll. XZ.

**Measurements [mm]:** abdomen (incl. appendages) 39.0, superior appendages 1.4, Hw 29.0.

**Remarks:** With its ochreous face, prominent, conical projection at the base of S9 and penile organ with broad tips *janetae* is closely related to *R. aculeatus*. The Liuxihe male specimens (Figs 8a-f) possess a penile organ almost identical to the type locality specimens from Hong Kong (Figs 10n-r), but not quite as broad as in *R. aculeatus* (Figs 10u, v). The superior appendages of *janetae* (Figs 8e, 10l, m) are elongate and narrow at base with basal projection near mid-point, whereas the superior appendages of *aculeatus* are broad at base with basal projection located ca one third length from base (Figs 10s, t, w, x). Unlike *janetae* specimens from Hong Kong, the wings of the Liuxihe and Xiangtoushan males have dark brown apical spots. A key to males of the 23 species of *Rhipidolestes* currently recognised is provided below.

**Distribution:** China (Guangdong and Hong Kong).

**Remarks:** These are the first records of *janetae* outside of Hong Kong.

Key to male *Rhipidolestes*

1. S9 with no conical projection or projection vestigial or reduced to minute tubercle ..... 2
- 1'. S9 with prominent conical projection or pronounced tubercle ..... 11
2. Face colour dark, either violet-blue or blackish-green ..... 3
- 2'. Face colour pale, either yellow or red ..... 5
3. Face colour violet-blue. China (Zhejiang) ..... *R. apicatus* Navás, 1934
- 3'. Face colour blackish-green ..... 4
4. Penile organ with long, broad, curved and reflexed horns; superior appendages with broad, square-shaped tip and short apical finger; inferior appendages with sharp, upwardly pointed projection (Figs 9a-d). China (Guangdong, Fujian) ..... *R. truncatidens* Schmidt, 1931
- 4'. Penile organ with short, broad, non-reflexed lobes which have acutely pointed apical, posterior margin; superior appendages with broad, square-shaped tip and short apical finger; inferior appendages with sharp, upwardly pointed projection (Figs 9e, f). China (Zhejiang) ..... *R. bidens* Schmidt, 1931
5. Face colour reddish. China (Jiangxi) ..... *R. rubripes* (Navás, 1936)
- 5'. Face colour yellowish or bronze-yellow ..... 6
6. S9 vestigial projection or small tubercle not bifid ..... 7
- 6'. S9 vestigial projection or small tubercle bifid ..... 8

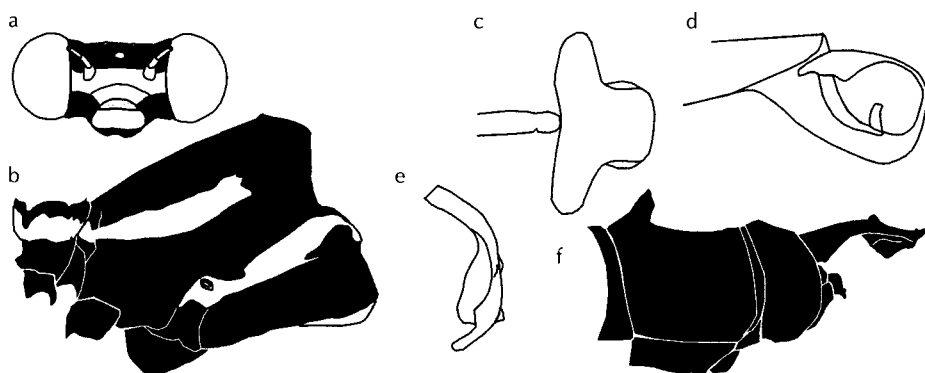


Figure 8: *Rhipidolestes janetae* ♂ from Guangdong — (a) head, frontal; (b) thorax, lateral; (c) penile organ, ventral; (d) same, lateral; (e) right superior appendage, dorsal; (f) caudal abdomen, lateral.

7. Superior appendages with moderately broad tip and long apical finger; inferior appendages with sharp, upwardly pointed projection (Figs 9g, h). Myanmar ..... *R. malaisei* Lieftinck, 1948
- 7'. Superior appendages with broad tip, short apical finger and prominent inwardly pointing basal projection; inferior appendages with small outward, peg-like projections; penile organ with very short, broad, squarish-tipped, non-reflexed lobes (Figs 9i-l). China (Guangdong, Hunan) ..... *R. chaoi* Wilson, 2004
8. Superior appendages with moderately broad tip and very long apical finger; inferior appendages with upwardly pointed, sharp projection (Figs 9m, n). China (Fujian) ..... *R. jucundus* Lieftinck, 1948
- 8'. Finger of superior appendages short ..... 9
9. Horns of penile organ broad, with rounded, triangular projections directed posteriorly, when viewed ventrally; face salmon pink; superior appendages with broad tip and very short, fine apical finger; inferior appendages simple and rounded (Figs 9o-q). China (Shaanxi) ..... *R. bastiaani* Zhu & Yang, 1998
- 9'. Penile organ with short, broad tips, without triangular projections directed ..... posteriorly, when viewed ventrally ..... 10
10. Superior appendages with broad tip and very short, fine apical finger; inferior appendages with median prominence and small upward pointed projection (Figs 9r-t). China (Guizhou) ..... *R. lii* Zhou, 2003
- 10'. Superior appendages with moderately broad tip and prominent apical finger; inferior appendages with a median bulge but no pointed projections. China (Zhejiang) ..... *R. nectans* (Needham, 1928)
11. Face colour pale blue, dark brown or blackish ..... 12
- 11'. Face colour yellow or reddish ..... 14
12. Face colour pale bluish in fresh specimens but blue colour can fade to yellow in preserved specimens (couplet 19 and Figs 9u-x). China (Guangdong) ..... *R. cyanoflavus* Wilson, 2000
- 12'. Face colour dark brown or blackish ..... 13
13. Wings with black tip; sup. app. broadly tipped with short apical finger; inf. app. with no overt projections; horns of penile organ, broadly tipped, with triangular projection (Figs 10a-d). China (Sichuan) ..... *R. yangbingi* Davies, 1998
- 13'. Wings with dark brown tip and distinctive, black labrum; broad, median cross-band; sup. app. with broad tip and short apical finger; inf. app. with no overt projections; horns of penile organ, broadly tipped, with triangular projection (Figs 10e-g). China (Guizhou) ..... *R. fascia* Zhou, 2003
14. Tip of conical projection bifid ..... 15
- 14'. Tip of conical projection without bifurcation ..... 16
15. Inferior appendage with outwardly & upwardly pointed projections; superior appendage with short, broad tips; penile organ with elongate and narrow horns (Figs 10h-k). China (Guangxi) ..... *R. laui* Wilson & Reels, 2003
- 15'. Inferior appendage with upwardly pointed projection; superior appendage elongate and narrow at base with inner projection near mid-point, tip broad with short apical finger; penile organ with moderately broad-tipped horns (Figs 10l-r). China (Guangdong, Hong Kong) ..... *R. janetae* Wilson, 1997

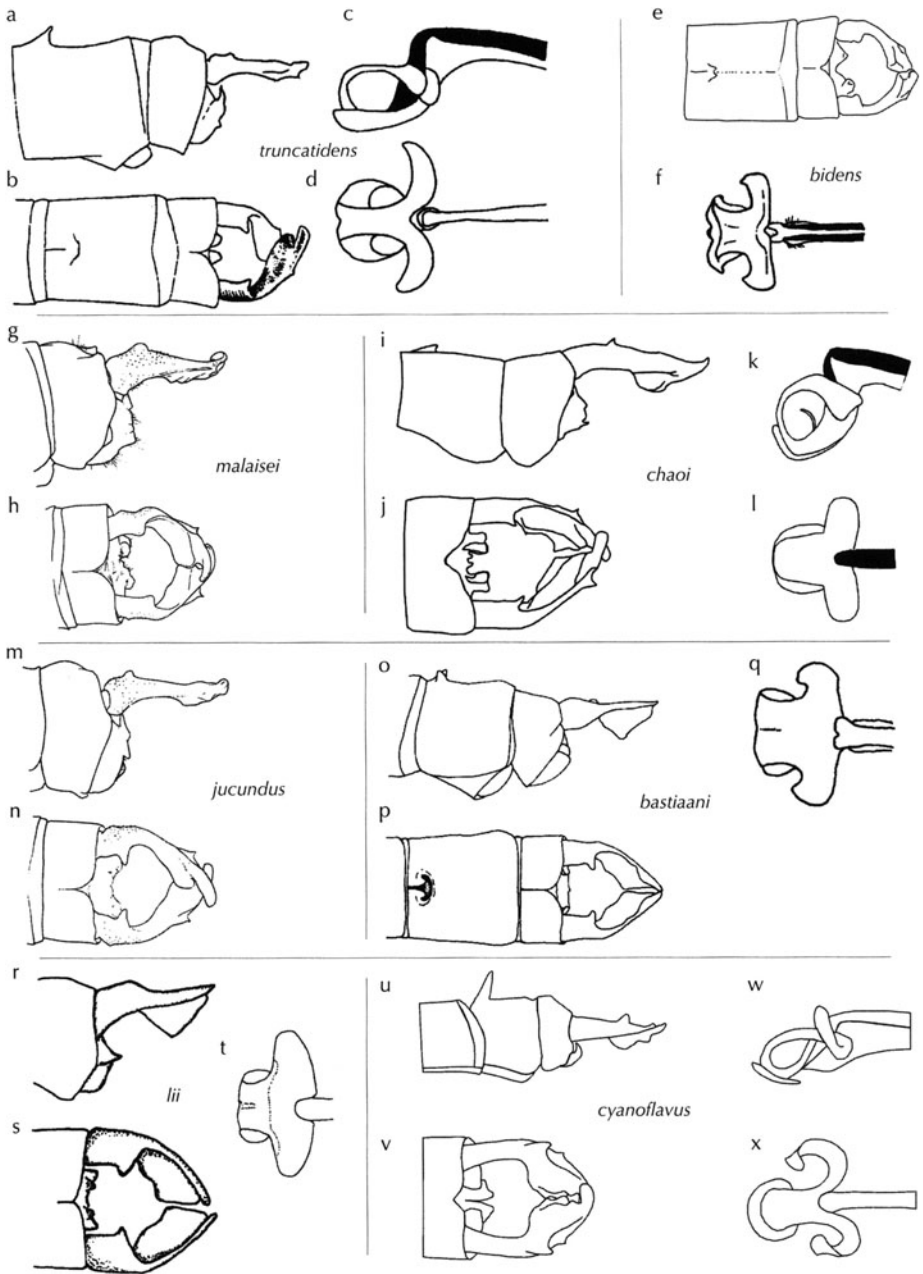


Figure 9: Male characters of eight *Ripidolestes* species — *R. truncatidens*: (a, b) from Schmidt (1931), (c, d) from Wilson (1997c); *R. bidens*: (e, f) from Schmidt (1931) and Asahina (1993a) respectively; *R. malaisei*: (g, h) from Lieftinck (1948); *R. chaoi*: (i-l) from Wilson (2004b); *R. jucundus*: (m, n) from Lieftinck (1948); *R. bastiaani*: (o, p) from Zhu & Yang (1998), (q) from Zhou (2003); *R. lii*: (r-t) from Zhou (2003); *R. cyanoflavus*: (u-x) from Wilson (2000a). — The figures show the caudal abdomen in lateral or dorsal view. The penile organ is illustrated in ventral and lateral view but not for all species.

16. Horns of penile organ fine or with extremely fine tendril-like tips ..... 18  
 16'. Penile organ with moderately broad or narrow, elongated horns ..... 17
17. Penile organ with broadly tipped, square-shaped lobes; superior appendage broad at base with inner projection at basal third, tip broad with short apical finger; inferior appendage with upwardly pointed projection (Figs 10s-z). China (Taiwan), Japan (Kyushu, Ryukyus) ..... *R. aculeatus* Ris, 1912  
 17'. Tip of penile organ moderately broad and curved; superior appendage with very fine short finger; inferior appendage with outwardly & upwardly pointed projections (Figs 11a-d). Endemic to Japan (Shikoku) ..... *R. hiraoi* Yamamoto, 1955
18. Penile organ with long, extremely fine, reflexed, tendril-like tips; superior appendage with very fine, short apical finger; inferior appendage with upwardly pointed projection ..... 19  
 18'. Horns of penile organ fine but not with long, tendril-like tips ..... 21
19. Both pairs of wings with distinctly pigmented apical tips (Figs 11e-h). Japan (Ryukyus) ..... *R. okinawanus* Asahina, 1951  
 19'. Wings with entirely clear or faintly darkened tips ..... 20
20. Tendril tips of penile organ curled outwardly, crotch obtusely angled (Figs 11i-k). Japan (Ryukyus) ..... *R. shozoi* Ishida, 2005  
 20'. Tendril tips of penile organ curled inwardly, crotch acutely angled (Figs 11l-n). Japan (Ryukyus) ..... *R. amaniensis* Ishida, 2005
21. Penile organ fine with additional projections at tips of horns (i.e. T-shaped tips, Figs 11o-q). Vietnam ..... *R. owadai* Asahina, 1997  
 21'. Penile organ fine without additional projections at tips of horns ..... 22
22. Tip of penile organ with sharply pointed, strongly dorso-ventrally reflexed horns; superior appendage with broad tip and long apical finger; inferior appendage with horizontal projection (Figs 11r-u). China (Guangxi) ..... *R. alleni* Wilson, 2000  
 22'. Tip of penile organ bluntly rounded ..... 23
23. Penile organ with fine, curved horns, which are strongly reflexed dorso-ventrally with bluntly rounded tips; superior appendage with broad tip and short apical finger; inferior appendage with upwardly pointed projection; face colour pale bluish in fresh specimens but blue colour can fade to yellow in preserved specimens (Figs 7a-c, 9u-x). China (Guangdong) ..... *R. cyanoflavus* Wilson, 2000  
 23'. Penile organ with fine, curved horns, which are not reflexed dorso-ventrally; superior appendage with very fine, short apical finger; inferior appendage with prominently upwardly pointed projection (Figs 11v-x). Japan (Koshiki-jima, Kyushu) ..... *R. asatoi* Asahina, 1994



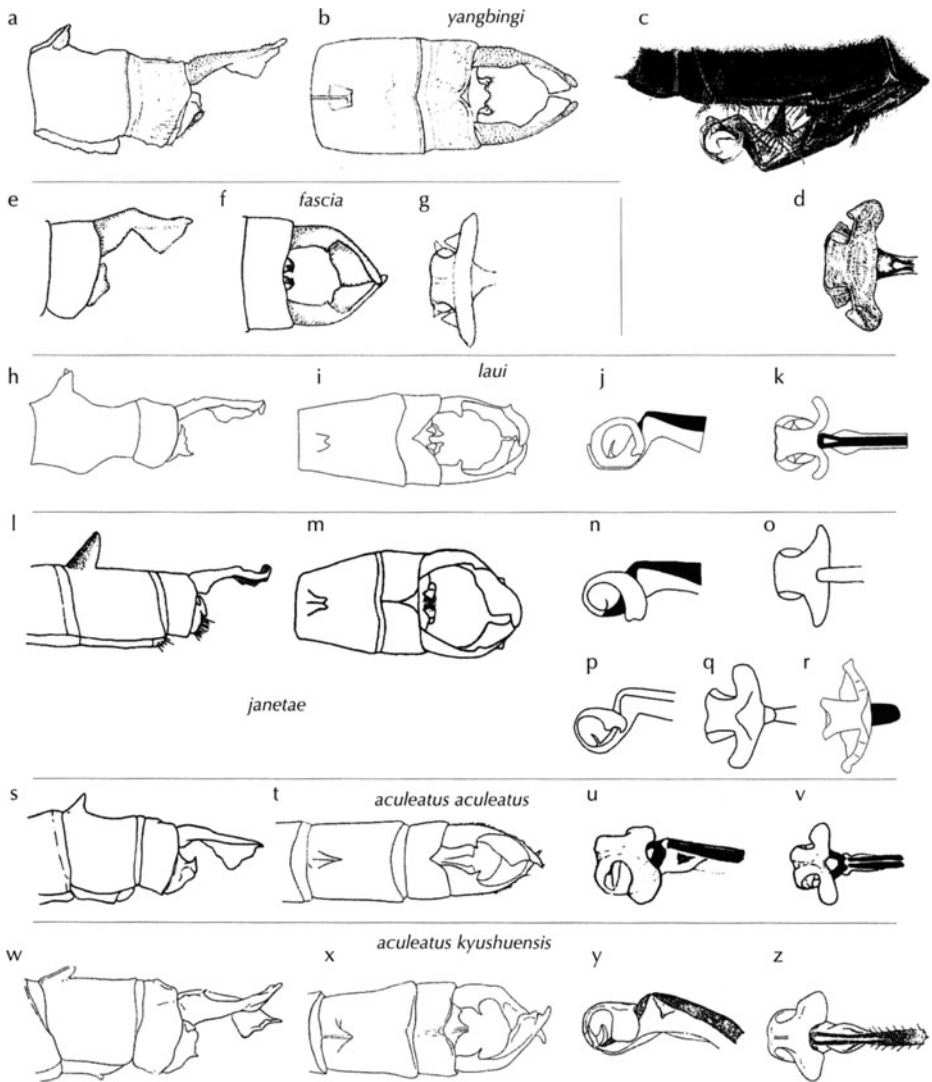


Figure 10: Male characters of six *Rhipidolestes* species — *R. yangbingi*: (a-d) from Davies (1998); *R. fascia*: (e-g) from Zhou (2003); *R. laui*: (h-k) from Wilson & Reels (2003); *R. janetae*: (l-o) from Wilson (1997c), (p-r) original, depicting another topotypical specimen and demonstrating a degree of natural variability and how the drawing can change dramatically depending on view point; *R. aculeatus aculeatus*: (s, u, v) from Asahina (1993b), (t) from Ris (1912); *R. aculeatus kyushuensis*: (w-z) from Asahina (1951). — The figures show the caudal abdomen and penile organ in lateral and dorsal view. Note that several drawings (n, u) reflect views from an oblique angle.

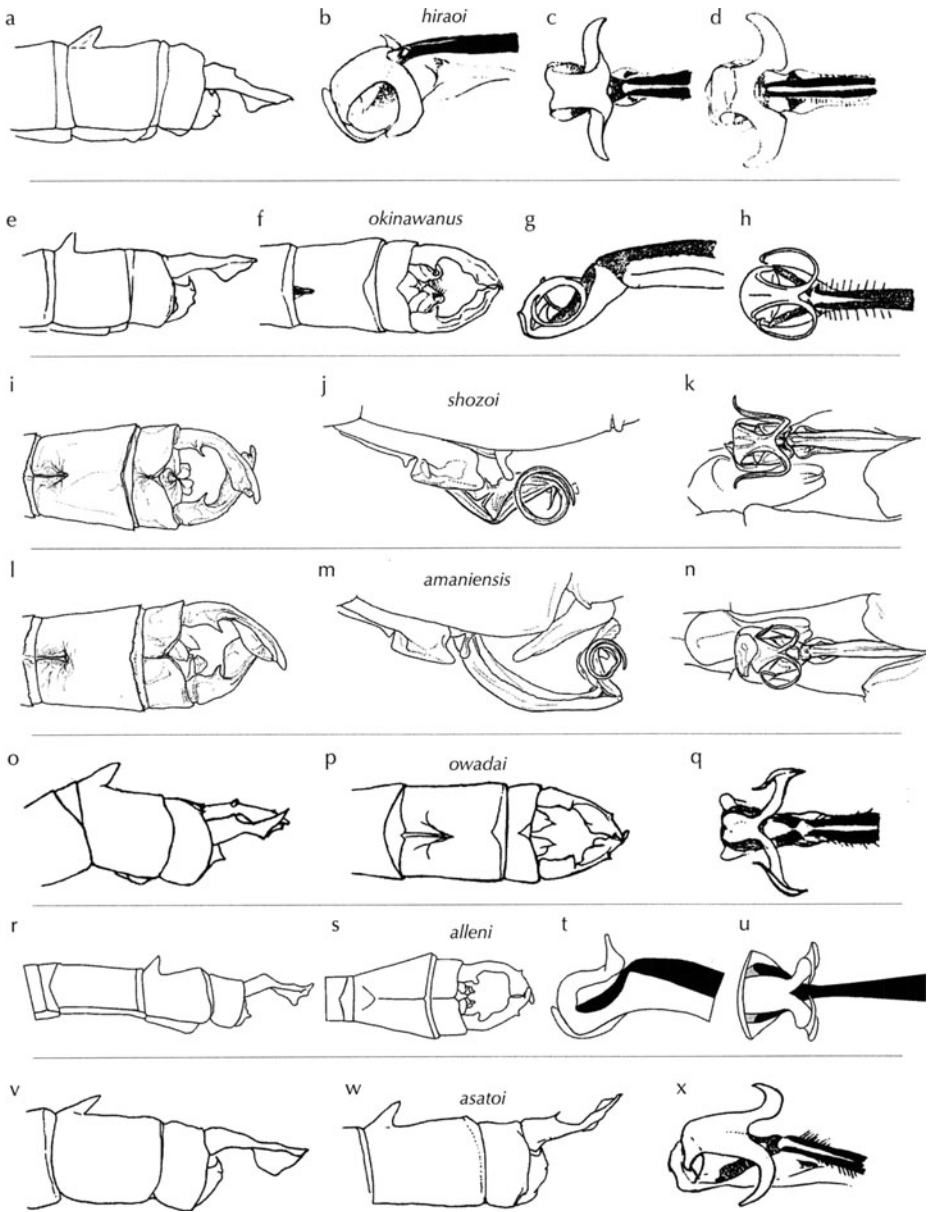


Figure 11: Male characters of six *Rhipidolestes* species — *R. hiraoui*: (a-d) from Asahina (1994a); *R. okinawanus*: (e-h) from Asahina (1993c); *R. shozoi*: (i-k), from Ishida (2005); *R. amaniensis*: (l-n) from Ishida (2005); *R. owadai*: (o-q), from Asahina (1997); *R. alleni*: (r-u) from Wilson (2000a); *R. asatoi*: (v-x) from Asahina (1964). — The figures show the caudal abdomen and penile organ in lateral and dorsal view. Note that some drawing (b, d, x) reflect views from an oblique angle.



Colour plate I. Two calopterygid species from Guangdong, China — (a) male *Archineura incarnata* from Nankunshan, 7 August 2004; (b) male *Atrocalopteryx atrocyana* from Nanling, 10 August 2005. Photos by Keith Wilson.



Colour plate II. Two calopterygid species from Guangdong, China — (a) male *Caliphaea nitens* from Nanling, 4 August 2004; (b) male of *Matrona basilaris basilaris* from Dinghushan, 15 June 1994. Photos by Keith Wilson.



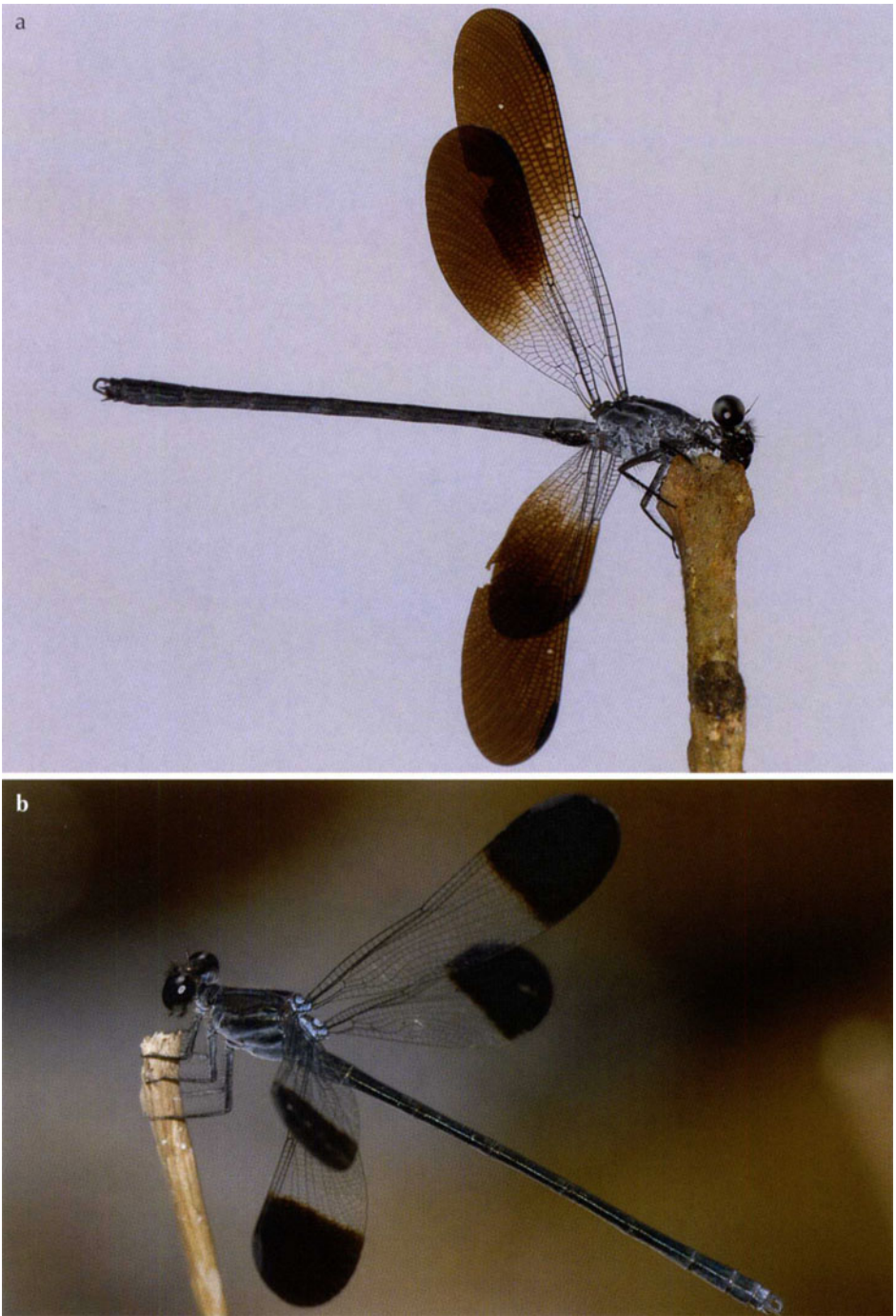


Colour plate III: Two calopterygid species from Guangdong, China — (a) male *Vestalis miao* from Shimentai, 5 November 2005; (b) male *Vestalis velata* from Shimentai, 5 November 2005. Photos by Keith Wilson.



Colour plate IV: A chlorocyphid species and an euphaeid species from Guangdong, China — (a) male *Rhinocypha chaoi* from Nankunshan, 7 August 2004; (b) male *Anisopleura qingyuanensis* from Nanling, 6 August 2004. Photos by Keith Wilson.





Colour plate V. Wing tip variation in the euphaeid *Bayadera melanopteryx* — (a) male from Nanling, form with black two-thirds of wing, 4 August 2004; (b) male from Nankunshan, form with black at wing tip only, 7 August 2004. Photos by Keith Wilson.



Colour plate VI: An euphaeid species and a synlestid species from Guangdong, China — (a) male *Euphaea superba* from Nanling, 10 August 2005; (b) ovipositing female *Megalestes heros* from Nanling, Guangdong, China, 5 August 2004. Photos by Keith Wilson.





Colour plate VII. The synlestid *Megalestes discus*, male from Nanling, 4 August 2004. Photo by Keith Wilson.



Colour plate VIII. Two coenagrionid species from Guangdong, China — (a) male *Ceriagrion fallax fallax* from Nanling, 4 August 2004; male *Pseudagrion pruinatum fraseri* from Dinghushan, 11 August 2005. Photos by Keith Wilson.

## COENAGRIONIDAE

*Aciagrion huaanense* Xu, 2005

**Specimens:** No specimen obtained. Observed and photographed KW, 1 ♂, 12 v 1996, Chebaling.

**Description of male:** Head with large, round, blue postocular spots finely linked across the vertex. Dorsum of synthorax black with thick, blue dorsal stripes. Dorsal carina, narrowly pale. Side of thorax blue above fading to pale yellow below, with narrow black humeral stripe. Legs pale brown, marked with black on distal outer surface of femora. Abdomen black above and pale brown below with S1-2 and base of S3 pale blue below and dorsum of S8-10 blue with large black rectangular spot at base of S8 not quite reaching to S9, and S9 with small indented black spot at base. S10 entirely blue.

**Remarks:** The photographs depict a male *Aciagrion*, which does not belong to *A. pallidum* Selys, 1891, *A. tillyardi* or *A. migratum* (see above). *A. hisopa* and *A. occidentale* Laidlaw, 1919 have been recorded from neighbouring Vietnam but neither fit the above description. Sui & Sun (1984) recorded *Aciagrion olympicum* Laidlaw, 1919, an Indian and Nepalese species, from Hainan and Hua (2000) also recorded it from Hunan and Xizang.

*A. huaanense* was recently described from a single female collected in Fujian. Xu (2005) considers *huaanense* is closest to *olympicum* and highlights a series of relatively minor colour and pattern differences between these two species. The author provides no evidence of any structural difference, but this is not altogether surprising when comparing female species of *Aciagrion*. The Guangdong male has similar markings and colour pattern on the head, synthorax and caudal abdomen to the newly described female *huaanense* but also strongly resembles Fraser's (1933) detailed description of male *olympicum* with the exception of colour pattern of the caudal abdomen. If *huaanense* is a genuine species, and not a synonym of *olympicum*, a careful comparison of male specimens from South China with *olympicum* specimens from India (Sikkim) should settle the matter.

As the gender of the original spelling '*huaanensis*' is not in agreement with the neuter gender of the genus name, it has to be corrected (Art. 31.2 ICZN).

*Aciagrion migratum* (Selys, 1876)

**Specimens:** 1 ♂, 1 ♀, Heishiding, 06 vii 2002, leg. ML.

**Remarks:** Needham (1930) treated Chinese specimens of this taxon as *A. hisopa* (Selys, 1876), which has a different colour pattern on the top of the head and its S8-10 are entirely blue in the male, whereas there is a black X-mark on S10 of *migratum*. Davies & Tobin (1984) listed *A. hisopa* from peninsula Malaysia and *A. migratum* from Japan. It is likely that all Chinese records of *hisopa* belong to *migratum*.

**Distribution:** China (Fujian, Guangdong, Hubei, Sichuan, Taiwan), Japan, Korea.

*Agriocnemis lacteola* Selys, 1877

*Agriocnemis lacteola* Selys; — Needham (1930: 255-256, pl. 19 (fig. 2), central and western China); — Asahina (1965: 494, Hong Kong); — Wilson (1995a: 48, 53, 55, Hong Kong); — Wilson (1997a: 18, Hong Kong).

**Specimens:** 1 ♂, Sigian, Shixing, NE Guangdong, 20 vii 2002, leg. TX.

**Distribution:** Bangladesh, China, India, Nepal and Thailand.

*Paracercion calamorum dyeri* (Fraser, 1919)

*Cercion calamorum dyeri* Fraser; — Lieftinck et al. (1984: 3, Taiwan); — Wilson (1995b: 56-57, 63, 65, Hong Kong); — Wilson (1997a: 19, Hong Kong).

**Specimens:** 1 ♀, Shimentai, 04 xi 2005, coll. KW.

**Remarks:** Weekers & Dumont (2004) recently established the genus *Paracercion* when the genus *Cercion* became no longer available following the transfer of the type species '*Cercion lindenbergii* Navás, 1840 to the genus *Erythromma*.

**Distribution:** Bangladesh, Cambodia, China, India, Nepal and Thailand.

## PLATYCNEMIDIDAE

*Calicnemia* sp.

(Figs 12a-c)

**Specimens:** 1 ♀, Dadingshan, 01 vii 2000, leg. ML.

**Description of female:** Small dark *Calicnemia* with yellow antehumeral stripe and blackish abdomen. Labium pale ochreous, labrum black, mandibles black with yellow quadrate spot. Top of head black with irregular yellow cross-stripe (Fig. 12a). Front of head black below with yellow cross-stripe, which narrows above clypeus. Dorsum of prothorax black with small isolated yellow spot each side of central lobe. Side of prothorax mainly yellow. Dorsum of synthorax black with narrow, yellow antehumeral stripe. Side of synthorax black with yellow stripes across metepisternum and metepimeron (Fig. 12b). Metaposternum yellow. Wings hyaline with dark brown squarish pterostigma and Fw with 15-16 Px and Hw also with 16 Px (Fig. 12c). Only two cells between discoidal cell and vein descending from subnodus – there are normally three cells here in *Calicnemia*. Discoidal cell rather elongate. Trochanters yellow, legs pale yellow with outer face of femora black. S1 black above and yellow below. S2-5 dark brown above and pale yellow below. S6-10 entirely blackish-brown.

**Measurements [mm]:** ♀, abdomen (including appendages) 30.5, appendages < 0.5, Hw 23.0.

**Remarks:** The identity of this female is not clear. *C. sinensis* females have orange abdomens, a yellow stripe across metepisternum, which joins with a broad yellow stripe across the metepimeron below the spiracle, and lacks a yellow stripe across the vertex. *C. haksik* Wilson & Reels, 2003 from Guangxi is a larger species with 19-20 Px. Female *C. chaoi* has an orange abdomen with a different body pattern and amber

wings. *C. miles* (Laidlaw, 1917) known from neighbouring Guangxi, is a small species with just 11-13 Ax, and its female possesses a yellow labium and a yellowish and reddish-brown abdomen. Female *C. eximia* (Selys, 1863), known from Guangxi, has a yellow or vermillion coloured labrum and a different pattern across top of head. The Dadingshan female is quite close to *C. imitans* Lieftinck, 1948 which also has just two cells between discoidal cell and vein descending from subnodus and a similar number of Px but it has a mainly yellow labrum, and the yellow stripe across metepisternum joins with the yellow stripe across metepimeron below the spiracle. Zhang (1999) has recorded *C. miniata* (Selys, 1886) from Fujian. This species has a yellow labium and a ferruginous abdomen. When compared with *Calicnemia* species recorded outside of China the Dadingshan female is closest to *C. pulverescens* (Selys, 1886) from India (N Bengal and Sikkim) but the female of this species has a head with a face coloured entirely black below and legs mainly black. It is likely that the Dadingshan female represents a new species of *Calicnemia*.

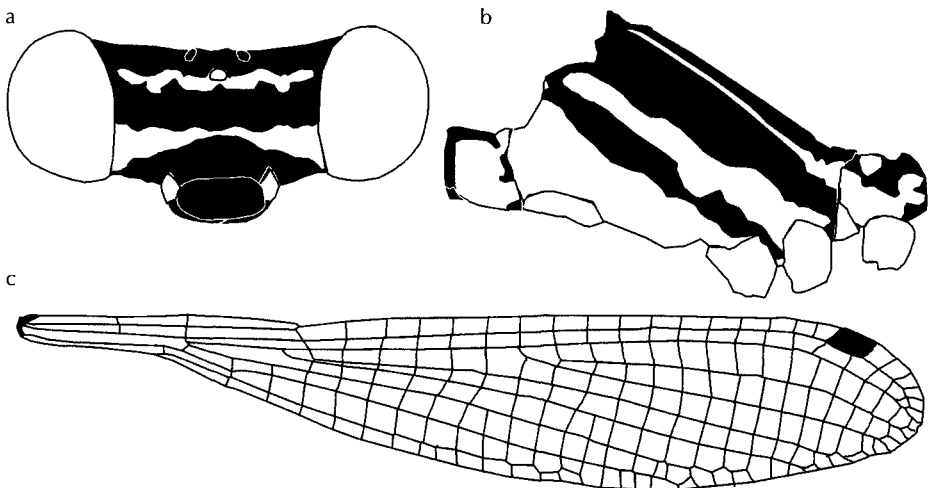


Figure 12: *Calicnemia* sp., ♀ from Dadingshan, Guangdong — (a) head, frontal; (b) thorax, lateral; (c) Hw.

## PLATYSTICTIDAE

### *Sinosticta debra* sp. nov. (Figs 13a-h)

**Etymology:** *S. debra* is named in honour of the late Debra Lynn Wilson, sister to Keith Wilson. The normal word formation ending with 'ae' if dedicated to a ladies name has not been adopted due to its homonym in English, namely 'debris'.

**Holotype male:** Chebaling (Fig. 1), 20 iv 2002, leg. XZ (no. 020349), deposited at South China Agriculture University, Department of Entomology, Guangzhou.

**Description:** Large, robust platystictid with greyish-blue tipped abdomen and bright yellow and black thorax. Labium pale yellow. Labrum, genae and distal two-thirds

of postclypeus yellow. Scape of antennae yellow, with pedicel and distal segments black. Top of head and frons black. Rear margin of head with pair of large, greyish-blue postocular spots. A pair of yellow, oblong spots beside vertex and minute yellow spot at centre of occipital margin. Dorsal view of head as illustrated in Figure 13a. Prothorax yellow at sides, with predominantly black dorsum. Dorsum of synthorax black with prominent, yellow antehumeral stripes, which fall slightly short of posterior margin of mesepisternum. Metepisternum and metepimeron yellow separated with thin black stripe along the metapleural suture. Side of thorax as illustrated in Figure 13b. Legs brown. Wings hyaline with black pterostigma subtending two cells. Hindwing as illustrated in Figures 13c, d. S1-2 predominantly yellow, with dark brown spots on dorsum. S3-5 yellow at sides, brown on dorsum and broadly ringed dark brown at distal quarter. S6-8 mainly blackish-brown, with oblong pale yellow spot at central, ventral margins. S9-10 greyish-blue on dorsum and at sides. Lower lateral third of S9-10 black. Coxae and trochanters yellow. Tip of abdomen as illustrated in Figure 13e. Tips of superior appendages with prominent, sharply pointed, ventral hooks angled inward and downward. Dorsal surface of superior appendages greyish-blue, black below. Inferior appendages black with greyish-blue spot at mid-dorsum. Inferior appendages slightly longer than superior appendages with hooked tip angled inwards and upwards. Caudal appendages as illustrated in Figures 13f-h.

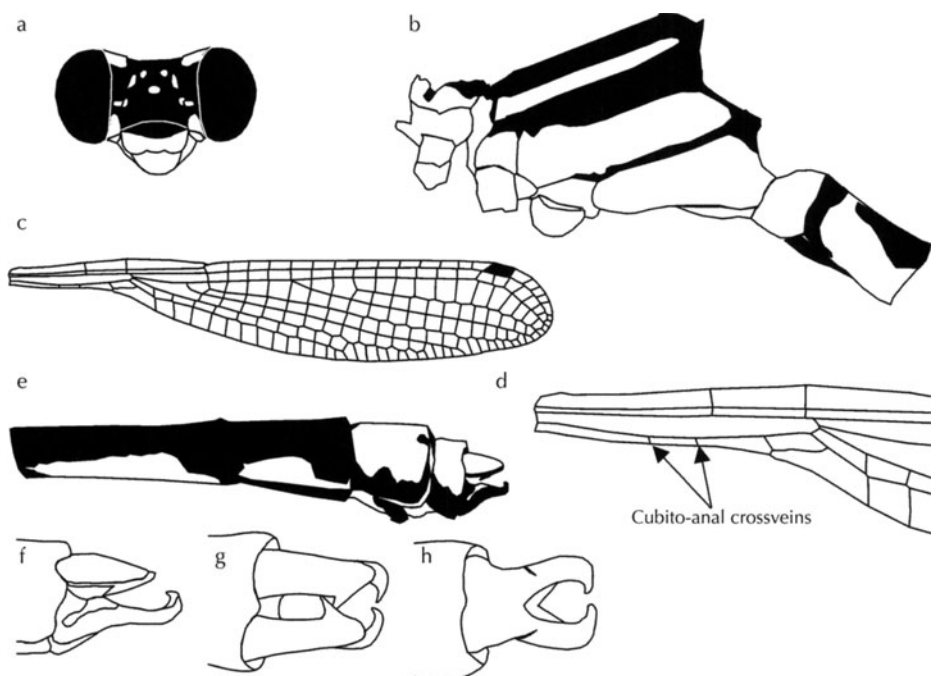


Figure 13: *Sinosticta debra* sp. nov., ♂ from Chebaling, Guangdong — (a) head, frontal; (b) thorax, lateral; (c) Hw; (d) Hw, base; (e) caudal abdomen, lateral; (f) anal appendages, lateral; (g) same, dorsal (h) same, ventral.

**Measurements [mm]:** ♂ abdomen (incl. appendages) 47.0, caudal appendages 1.2, Hw 29.5.

**Differential diagnosis:** Hitherto, two species of *Sinosticta* Wilson, 1997 have been described, both from south China. These are *S. hainanensis*, described from Hainan (Wilson & Reels 2001), and *S. ogatai*, known from Hong Kong and south Guangdong (Wilson 2004a). The known distribution of the three *Sinosticta* species is shown in Figure 1. *S. debra* is easily separated from *S. hainanensis* and *S. ogatai* based on colour pattern of head, body and abdomen. *S. hainanensis* and *S. ogatai* do not possess postocular spots. The synthorax of both is coloured predominantly black whereas the metaposternum, metepimeron and metepisternum of *debra* are entirely yellow. The abdomens of *hainanensis* and *ogatai* are predominantly dark brown whereas the basal half of the abdomen in *debra* is heavily coloured yellow below. The synthoracic patterns of *hainanensis* and *ogatai* are illustrated in Wilson & Reels (2001). There are also significant structural differences. The inferior appendages of *debra* are slightly longer than the superior appendages and are hooked to a far greater extent than in *hainanensis* and *ogatai*. The anal appendages of *hainanensis* are shown in Wilson & Reels (2001) and those of *ogatai* in Wilson (1997).

**Remarks:** The platystictid genus *Sinosticta* belongs to the subfamily Sinostictinae, which is characterised by CuP extending well beyond the mid-point of the wing, the presence of one or more supplementary cubito-anal crossveins (= postcubital vein sensu Fraser 1957), and males with stout, relatively simple, caudal appendages (Wilson 1997b). The feature, CuP extending well beyond the mid-point of the wing, is shared with the New World Palaenematinae.

#### DOUBTFUL RECORDS FROM GUANGDONG, HONG KONG AND MACAU

*Matrona basilaris nigripectus* Selys, 1879; — Zhang (1999: 193, fig. 24-6, Guangdong); — Hua (2000: 6, Guangdong).

The nominate ssp. was described from N China and the ssp. *M. basilaris nigripectus* was described from Assam and ranges into Thailand. Intermediate forms may be present in W China but *basilaris nigripectus* is unlikely to occur in Guangdong. Härmäläinen (2004) remarked that Sui & Sun's (1984) record of *nigripectus* from neighbouring Fujian was an obvious misidentification.

*Vestalis gracilis* (Rambur, 1842); — Hua (2000: 6-7, Guangdong).

Sui & Sun (1984) only recorded *gracilis* from Yunnan in China but Hua (2000) listed *gracilis* from Anhui, Fujian, Guangdong, Jiangxi, Taiwan, Xizang, Yunnan and Zhejiang. The extensive records from south China and Taiwan appear to have been listed in error.

*Rhinocypha spuria* Selys, 1879; — Sui & Sun (1984: 234-235); — Hua (2000: 7). Separated from its close congener *R. fenestrella* by the position and size of the Hw, apical vitreous spot. In *spuria* the spot is slightly larger and lies proximal to the line of the pterostigma. Sun & Sui (1984: pl. 29, fig. 4) provide a photograph, labelled *R. spuria*, which illustrates typical *fenestrella*.

*Bayadera hyalina* Selys, 1879; — Hua (2000: 7, Guangdong).  
Probably a misidentification of *B. bidentata* or *B. continentalis*.

*Euphaea ochracea* (Selys, 1859); — Hua (2000: 7, Guangdong, as *Allophaea ochracea*).

Known from Burma (Myanmar), India, Laos, Nepal, P. Malaysia, Thailand, Vietnam. There are no confirmed records from mainland China. Sui & Sun (1984: 206-208) recorded *E. ochracea* from Hainan and Yunnan. They also recorded *E. ornata* (Campion, 1924), as *Pseudophaea ornata*, from Hainan and Yunnan. The two species are superficially quite similar. It is quite possible that *ochracea* is present in Yunnan and *ornata* is most probably endemic to Hainan.

*Euphaea ornata* (Campion, 1924); — Hua (2000: 7, Guangdong, as *Anisophaea ornata*).

Considered to be endemic to Hainan (see above). There are no confirmed records from mainland China. The record in Hua (2000) may relate to a misidentification of *E. decorata*.

*Lestes umbrinus* Selys, 1891; — Sui & Sun (1984: 305-306, figs 209a, b, Guangdong).

*L. umbrinus* and *L. concinnus* are difficult to separate and were once considered synonyms. Sui & Sun do not list *concinnus* from China and their drawings provided in figs 209a, b are much closer to *concinnus* than to *L. umbrinus*. Lai (1971) also recorded *L. umbrinus* from Hong Kong. For a comparison of *L. umbrinus*, *L. concinnus* and *L. nodalis* see Lieftinck (1960: 230-234). Hua (2000) recorded *concinnus* from Guangdong. Records of *umbrinus* in China require conformation.

*Aciagrion hisopa* Selys, 1876; — Hua (2000: 8, Guangdong).

See *A. migratum* above.

*Ceriagrion coromandelianum* (Fabricius, 1798); — Hua (2000: 8, Guangdong).

Once thought to include orange reddish specimens from China and Japan. Asahina (1967b) revised the Asiatic species of *Ceriagrion* and considered all records outside the known range of India and Sri Lanka require "careful revision". The abdomen of *coromandelianum* is entirely yellow in male and olive in the female without any black markings. Records of '*coromandelianum*' from China are probably misidentifications of *C. auranticum ryukyuanum* Asahina, 1967 or *C. nipponicum* Asahina, 1967.

*Ceriagrion erubescens* Selys, 1891; — Hua (2000: 8, Guangdong).

Originally described from Queensland, Shanghai and Rangoon. Lieftinck (1951) showed that true *erubescens* is limited to N Australia, New Guinea and possibly the Solomons. Records of '*erubescens*' from China are probably misidentifications of *C. auranticum ryukyuanum* or *C. nipponicum*.

*Ischnura elegans* (Vander Linden, 1820); — Hua (2000: 9, Guangdong).

This Palearctic species is restricted to northern China. Its presence in southern China is unlikely.



*Coelliccia didyma* (Selys, 1863); — Hua (2000: 9, Guangdong).

Records of *C. didyma* in Guangdong are probably misidentification of *C. cyanomelas*. *C. didyma*, which is known from India, P. Malaysia, and Thailand is superficially very similar in appearance to *C. cyanomelas*, which is common and widespread in southern China. It is slighter with a different shaped penile organ.

*Pyrrhosoma tinctipenne* (McLachlan, 1894); — Hua (2000: 9, Hong Kong, as *Neorhythromma tinctipennis* [sic]).

Hua (2000) listed this taxon also from Sichuan and Yunnan. Asahina (1977) examined Needham's (1930) and Klots' (1947) specimens collected from Sichuan and Guangxi, identified as *P. tinctipenne* (McLachlan), and reidentified most of them as *Calicnemia eximia*. Several of Needham's specimens from Sichuan were confirmed as true *P. tinctipenne*. It is not known which was the original source of the record from Hong Kong but it is likely to be a misidentification of *C. sinensis*.

*Prodasineura sita* (Kirby, 1893); — Sui & Sun (1984: 292-293, figs 199a, b, Guangdong, as *Caoneura sita*).

A Sri Lankan endemic which resembles immature *P. autumnalis*.

*Prodasineura nigra* (Fraser, 1922); — Eastern & Liang (2000: 76-77, Coloane Island and Seac Pai Van Park, Macau).

Described from King Island, Mergui, lower Burma. Fraser (1933) stated *nigra* and also *o'doneli* from Bengal are very closely related to *autumnalis* and "may be but local races of a single species". In Hong Kong and Guangdong *autumnalis* has many colour stages, varying from brownish with white markings to entirely black as it matures. *P. nigra* is separated from *autumnalis* only on the basis of its "extreme melanism". Using Fraser's (1933) key mature Chinese *autumnalis* keys out as *nigra*. Both names may prove to be synonyms. If synonymy is confirmed, a First Revisor must determine the precedence of the simultaneously published names (Art. 24.2.2. ICZN).

Table 3. Checklist of Zygoptera recorded from Guangdong (G), Hong Kong (H) and Macau (M).

Taxon	Source of primary record for Guangdong, Hong Kong and Macau	G	H	M
<b>Diphlebiidae</b>				
<i>Philoganga robusta</i> Navás, 1936				
	Fellowes et al. (2003a): Nanling, Guangdong	+		
	<i>vetusta</i> Ris, 1912			
	Ris (1912): type locality Tsa-Yiu-San, Guangdong;	+	+	
	Asahina (1967a): Hong Kong			
<b>Calopterygidae</b>				
<i>Archineura incarnata</i> (Karsch, 1892) — Plate Ia				
	Hua (2000): Fujian, Guangdong, Guangxi, Guizhou, Hebei, Hunan, Jiangxi, W China, Zhejiang	+		
<i>Atrocalopteryx atrata</i> (Selys, 1853)				
	Hua (2000): Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Sichuan, Zhejiang, as <i>Calopteryx atrata</i>	+		

<b>Taxon</b>	<b>Source of primary record for Guangdong, Hong Kong and Macau</b>	<b>G</b>	<b>H</b>	<b>M</b>
<i>Atrocalopteryx atrocyana</i> (Fraser, 1935) — Plate Ib	This paper: Nanling and Shimentai, Guangdong	+		
<i>Caliphaea nitans</i> Navás, 1934 — Plate IIa	Fellowes et al. (2003a): Nanling, Guangdong	+		
<i>Calopteryx melli</i> Ris, 1912	Ris (1912): type locality Tsai Yiu San, Guangdong	+		
<i>Matrona basilaris basilaris</i> Selys, 1853	Wilson (1999): Dinghushan, Guangdong	+		
<i>Mnais andersoni tenuis</i> Oguma, 1913	Zhang (1999): Fujian, Guangdong, Jiangxi, Yunnan as <i>M. icteroptera</i> Fraser, 1929	+		
<i>mneme</i> Ris, 1916	Asahina (1974): Hong Kong; Wilson (1999): Dinghushan, Guangdong	+	+	
<i>Neurobasis chinensis chinensis</i> (Linnaeus, 1758)	Asahina (1965): Hong Kong; Wilson (1999): Dinghushan, Guangdong	+	+	
<i>Vestalis miao</i> Wilson and Reels, 2001 — Plate IIIa	Fellowes et al. (2004a): Heishiding, Guangdong	+		
<i>velata</i> Ris, 1912 — Plate IIIb	Ris (1912): type locality Tsai-Yiu-San, Guangdong	+		
<i>venusta</i> Hämäläinen, 2004	This paper: Chengjia, Guanyinshan and Luokeng, Guangdong	+		
<b>Chlorocyphidae</b>				
<i>Indocypha katharina</i> (Needham, 1930)	Chan et al. (2004b): Quncaitang, Luokeng, Guangdong	+		
<i>Libellago lineata</i> (Burmeister, 1839)	Sui & Sun (1984): Guangdong	+		
<i>Rhinocypha chaoi</i> Wilson, 2004 — Plate IVa	Wilson (2004b): type locality Dadingshan (Nanling), Guangdong	+		
<i>drusilla</i> Needham, 1930	Fellowes et al. (2003b) Guanyinshan, Guangdong	+		
<i>fenestrella</i> (Rambur, 1842)	Hua (2000): Guangdong, Hainan, Yunnan	+		
<i>perforata perforata</i> (Percheron, 1835)	Asahina (1965): Hong Kong; Wilson (1999): Dinghushan, Guangdong	+	+	
<b>Euphaeidae</b>				
<i>Anisopleura furcata</i> Selys, 1891	Hua (2000): Guangdong, Guangxi, Sichuan	+		
<i>qingyuanensis</i> Zhou, 1982 — Plate IVb	Fellowes et al. (2003a): Nanling, Guangdong.	+		
<i>Bayadera bidentata</i> Needham, 1930	This paper: Heishiding, Chebaling, Nanling, Dachouding, Guangdong	+		
<i>continentalis</i> Asahina, 1973	Ris (1912): Tsai Yiu Shan, Guangdong, Formosa as <i>B. hyalina</i> not of Selys	+		
<i>melanopteryx</i> Ris, 1912 — Plate V a, b	Ris (1912): type locality Tsai Yiu San, Guangdong	+		
<i>Euphaea decorata</i> (Selys, 1853)	Selys & Hagen (1854): Hong Kong; Needham (1930): "near Canton", Guangdong	+	+	
<i>opaca</i> Selys, 1853	Lai (1971): Hong Kong; Hill (1982): Hong Kong (possibly historical records of <i>superba</i> , see remarks under <i>E. superba</i> in main text)			+

Taxon	Source of primary record for Guangdong, Hong Kong and Macau	G	H	M
<i>Euphaea superba</i>	Kimmins, 1936 — Plate VIa This paper: Chebaling, Liuxihe, Nanling and Xiaokeng, Guangdong	+		
<b>Synlestidae</b>				
<i>Megalestes discus</i>	Wilson 2004 — Plate VII This paper: Nanling, Guangdong (note Wilson (2004b): type locality Mangshan (Nanling), Hunan Province) <i>distans</i> Needham, 1930 This paper: Dawuling, Guangdong <i>heros</i> Needham, 1930 — Plate VIb Fellowes et al. (2003a): Nanling, Guangdong	+		
<b>Lestidae</b>				
<i>Indolestes peregrinus</i>	(Selys, 1916) This paper: Shimentai, Guangdong	+		
<i>Lestes concinnus</i>	Hagen in Selys, 1862 Hill (1982: 5, fig. d) Hong Kong; Hua (2000): Fujian, Guangdong, Guangxi, Hong Kong	+	+	
<i>nodalis</i>	Selys, 1891 Wilson (1995): Hong Kong		+	
<i>praemorsus praemorsus</i>	Hagen in Selys, 1862 Asahina (1965): Hong Kong; Fellowes et al. (2002a): Qixingkeng, Guangdong	+	+	
<i>Sinolestes edita</i>	Needham, 1930 May (1933) as <i>S. ornata</i> Needham	+		
<b>Megapodagrionidae</b>				
<i>Agriomorpha fusca</i>	May, 1933 May (1933): type locality Fan-Chi-Shan, Guangdong	+	+	
<i>Lestomima flavostigma</i>	May, 1933 May (1933): type locality Wen-Tu-Wei, Guangdong	+		
<i>Mesopodagrion tibetanum</i>	McLachlan, 1896 Hua (2000): Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Sichuan, Xizang, Yunnan, Zhejiang	+		
<i>Philosina alba</i>	Wilson, 1999 Wilson (1999): type locality Dinghushan, Guangdong <i>buchi</i> Ris, 1917 Asahina (1978): Fujian, Guangdong (Canton), Guangxi	+		
<i>Rhipidolestes chaoi</i>	Wilson, 2004 Wilson (2004b): Dadingshan (Nanling), Guangdong, type locality Mangshan, (Nanling), Hunan <i>cyanoflavus</i> Wilson, 2000 Wilson (2000a): type locality Baiyong, Guangdong <i>janetae</i> Wilson, 1997 Wilson (1997c): type locality Hong Kong; this paper: Xiangtoushan, Guangdong <i>truncatidens</i> Schmidt, 1931 Schmidt (1931): type locality Canton & Tsha-jiusan, Guangdong	+		
<b>Coengrionidae</b>				
<i>Aciagrion migratum</i>	(Selys, 1876) This paper: Heishiding, Guangdong <i>huanensis</i> Xu, 2005 This paper: Chebaling, Guangdong <i>tillyardi</i> (Laidlaw, 1919) Wilson (1999): Dinghushan, Guangdong; Wilson (2000b): Hong Kong	+		

Taxon	Source of primary record for Guangdong, Hong Kong and Macau	G	H	M
<i>Agriocnemis femina oryzae</i> (Lieftinck, 1962)				
	Ris (1916): Hong Kong as <i>A. femina</i> ; Wilson (1999): Dinghushan, Guangdong	+	+	
	<i>lacteola</i> Selys, 1877			
	Asahina (1965): Hong Kong; this paper: Shixing, Guangdong	+	+	
	<i>pygmaea</i> (Rambur, 1842)			
	Asahina (1965): Hong Kong; Fellowes et al. (2002a): Qixingkeng, Guangdong; Eastern & Liang (2000): Macau	+	+	+
<i>Ceriagrion auranticum ryukyuanum</i> Asahina, 1967				
	Asahina (1965): Hong Kong as <i>C. latericum</i> Lieftinck; Fellowes et al. (2002a): Qixingkeng, Guangdong as <i>C. auranticum</i> Fraser; Eastern & Liang (2000): Macau	+	+	+
	<i>azureum</i> (Selys, 1891)			
	Fellowes et al. (2003d): Chebaling, Guangdong	+		
	<i>fallax fallax</i> Ris, 1914 — Plate VIIIa			
	Needham (1930): Kwangtung & Szechuen	+		
	<i>melanurum</i> Selys, 1876			
	Hua (2000): Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang	+		
<i>Ischnura aurora</i> Brauer, 1865				
	Sui & Sun (1984): Guangdong as <i>I. delicata</i> Hagen	+		
	<i>asiatica</i> Brauer, 1865			
	Brauer (1865): type locality Hong Kong and Shanghai		+	
	<i>senegalensis</i> (Rambur, 1842)			
	Brauer (1866): Hong Kong; Wilson (1999): Dinghushan, Guangdong; Eastern & Liang (2000): Macau	+	+	+
<i>Ischnura</i> sp. — see Cover photograph				
	[ <i>rufostigma</i> -group, discussed in Wilson & Reels (2003)]			
	Asahina (1965): Hong Kong as <i>I. rufostigma mildredae</i> Fraser; Fellowes et al. (2002a): Qixingkeng, Guangdong as <i>I. mildredae</i>	+	+	
<i>Mortonagrion Hirosei</i> Asahina, 1972				
	Asahina (1992): Hong Kong		+	
<i>Onychargia atrocyana</i> Selys, 1865				
	Asahina (1987): Hong Kong		+	
<i>Paracercion calamorum dyeri</i> (Fraser, 1919)				
	Wilson (1995): Hong Kong; this paper, Shimentai, Guangdong	+	+	
	<i>hieroglyphicum</i> (Brauer, 1865)			
	Brauer (1865): type locality Hong Kong & Shanghai		+	
	<i>melanotum</i> (Selys, 1876) syn. <i>Cercion sexlineatum</i> (Selys, 1883)			
	Wilson (1999): Dinghushan, Guangdong as <i>Cercion sexlineatum</i> ;	+	+	+
	Wilson (2003): Hong Kong; Wilson (1996): Macau as <i>C. sexlineatum</i>			
<i>Pseudagrion microcephalum</i> (Rambur, 1842)				
	Saito & Ogata (1995): Hong Kong; Hua (2000): Fujian, Guangdong, Jiangxi	+	+	
	<i>pruinatum fraseri</i> Schmidt, 1934 — Plate VIIIb			
	Wilson (1999): Dinghushan, Guangdong;	+	+	
	Wilson (2003): Hong Kong			
	<i>rubriceps</i> Selys, 1876			
	Asahina (1965): Hong Kong; Wilson (1999): Dinghushan, Guangdong	+	+	
	<i>spencei</i> (Rambur, 1842)			
	Asahina (1987): Hong Kong; Fellowes et al. (2002a): Qixingkeng, Guangdong	+	+	

Taxon	Source of primary record for Guangdong, Hong Kong and Macau	G	H	M
<b>Platycnemididae</b>				
<i>Calicnemia chaoi</i> Wilson, 2004				
	Wilson (2004b): type locality Pengshan (Nanling), Guangdong	+		
	<i>sinensis</i> Lieftinck, 1984			
	Lieftinck et al. (1984): Guangdong or Hainan (double labelled specimen), type-loc. Fujian; Zhang (1999): Fujian, Guangdong, Zhejiang	+	+	
<i>Calicnemia</i> sp.				
	This paper: Dadingshan, Guangdong	+		
<i>Coelliccia cyanomelas</i> Ris, 1912				
	Ris (1912): type locality Tsa-Yiu-San, Guangdong; Asahina (1965): Hong Kong	+	+	
	<i>flavicauda</i> Ris, 1912			
	Hua (2000: 9) Guangdong	+		
<i>Copera ciliata</i> (Selys, 1863)				
	Asahina (1965): Hong Kong as <i>C. annulata</i> ; Wilson (1999): Dinghushan, Guangdong	+	+	
	<i>marginipes</i> (Rambur, 1842)			
	Asahina (1965): Hong Kong; Fellowes et al. (2002d): Wutongshan, Guangdong; Eastern & Liang (2000): Macau	+	+	+
<i>Indocnemis orang</i> Förster in Laidlaw, 1907				
	Ris (1912): Tsa-Yiu-San, Guangdong	+		
<i>Platycnemis pierrati</i> Navás, 1935				
	Navás (1935): type locality Guangdong & Jiangxi. Note: may be a synonym; its rather sparse description is compatible with immature <i>Copera marginipes</i>	+		
<b>Platystictidae</b>				
<i>Drepanosticta brownelli</i> Tinkham, 1938				
	Tinkham (1938): type locality Tai-wa-tsz (Monastery), Guangdong	+		
	<i>hongkongensis</i> Wilson, 1997			
	Wilson (1997b): Hong Kong; Fellowes et al. (2002d): Wutongshan, Guangdong	+	+	
<i>Protosticta beaumonti</i> Wilson, 1997				
	Wilson (1997b): Hong Kong; Wilson (1999): Dinghushan, Guangdong	+	+	
	<i>taipokauensis</i> Asahina & Dudgeon, 1987			
	Asahina & Dudgeon (1987): Hong Kong; Fellowes et al. (2003a): Nanling, Guangdong	+	+	
<i>Sinosticta debra</i> sp. nov.				
	This paper: Chebaling, Guangdong	+		
	<i>ogatai</i> (Matsuki & Saito, 1996)			
	Wilson (1995): Hong Kong as Platystictidae sp.; Matsuki & Saito (1996): Hong Kong as <i>Drepanosticta ogatai</i> ; Fellowes et al. (2002d): Wutongshan, Guangdong	+	+	
<b>Protoneuridae</b>				
<i>Prodasineura autumnalis</i> (Fraser, 1922)				
	Brauer (1866): Hong Kong as <i>Alloneura interrupta</i> ; Wilson (1999): Dinghushan, Guangdong; Eastern & Liang (2000): Macau	+	+	+
	<i>croconota</i> (Ris, 1916)			
	Wilson (1995): Hong Kong; Wilson (1999): Dinghushan, Guangdong	+	+	
	<i>verticalis</i> (Selys, 1860)			
	Eastern & Liang (2000): Coloane Is. & Seac Pai Van Park, Macau			+
<b>Totals</b>		<b>79</b>	<b>38</b>	<b>7</b>

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